ORDER NO. MD9403029C1
A6

Service Manual

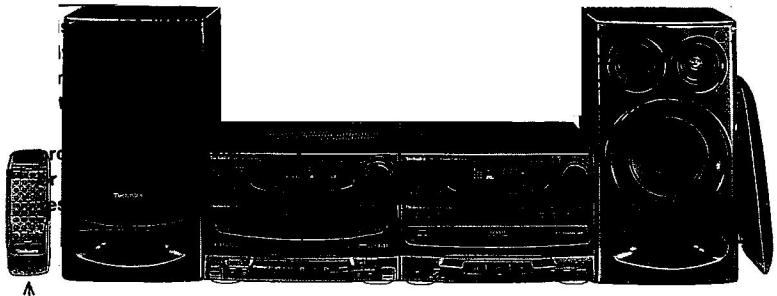
COMPACT disc DIGITAL AUDIO

MASH* multi-stage noise shaping

Tuner/Compact Disc Changer

SL-CH90
SL-CH90T

SB-CH90/ SB-CH90T ⚠ WARNING SB-CH90/ SB-CH90T



Remote Control Transmitter

SU-CH90 / SU-CH90T

SL-CH90/ SL-CH90T

Colour

(K) ... Black Type

Area

Suffix for Model No.	Area	Colour
(PP)	U.S.A. and Canada	(K)

Note:

Brand	Area
Panasonic	U.S.A.
Technics	Canada

Because of unique interconnecting cables, when a component requires service , send or bring in the entire system.

TRAVERSE DECK : RAE0113Z MECHANISM SERIES

■ SPECIFICATIONS

■ FM TUNER SECTION

Frequency range	87.9 – 107.9 MHz (200 kHz steps) 87.5 – 108.0 MHz (100 kHz steps)
Sensitivity	23.3 dBf (4.0 µV, IHF '58)
Total harmonic distortion	
MONO	0.3%
STEREO	0.5%
S/N Ratio	
MONO	65 dB
Frequency response	50 Hz – 15 kHz (+0.5 dB, -2 dB)
Image rejection at 98.1 MHz	35 dB
Stereo separation at 1 kHz	35 dB
Antenna terminal(s)	75 Ω (unbalanced)

■ AM TUNER SECTION

Frequency range	520 – 1710 kHz
Sensitivity	
(for 500 mW)	250 µV/m
(S/N 20 dB)	500 µV/m

■ CD SECTION

Sampling frequency	44.1 kHz
Decoding	16–bit linear
Beam Source/wave length	Semiconductor laser/780nm
Number of channels	2 – channel, Stereo
Frequency response	20 Hz–20 kHz (+1, –2 dB)
S/N Ratio	90 dB filter (JIS. A)
Wow and Flutter	Below measurable limit
Digital filter	4 times over sampling
D/A converter	Multi stage noise shaping

■ GENERAL

Power consumption	170 W
Power supply	AC 120 V, 60 Hz
Dimension (W x H x D)	270 x 184.4 x 343.9 mm (10 5/8" x 7 17/64" x 13 35/64")
Weight	4.2 kg (9.33 lb.)

* MASH is a trademark of NTT.

Notes :

1. Specifications are subject to change without notice. Weight and dimensions shown are approximate.
2. Total harmonic distortion is measured by the digital spectrum analyzer.

System	Amplifier/Cassette player	Tuner/CD Changer	Speaker
SC-CH90P	SU-CH90P	SL-CH90PP	SB-CH90P
SC-CH90TPC	SU-CH90TPC	SL-CH90TPP	SB-CH90TP

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Panasonic® / Technics

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NOTE :
Refer to the service manual for Model No. SU-CH90/SU-CH90T (Order No. MD9403034C1) for information on "ACCESSORIES" , "CONNECTIONS" and "PACKAGING".

■ PRECAUTION OF LASER DIODE

CAUTION : This unit utilizes a class 1 laser. Invisible laser radiation is emitted from the optical pick up lens When the unit is turned on:

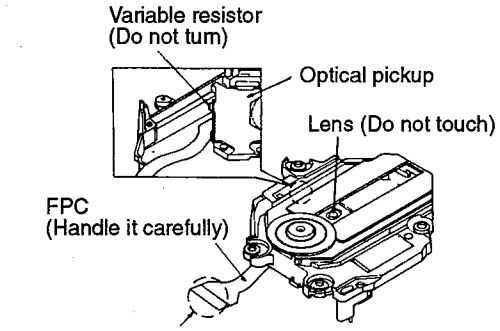
1. Do not look directly into the pick up lens.
2. Do not use optical instruments to look at the pick up lens.
3. Do not adjust the preset variable resistor on the pickup unit .
4. Do not disassemble the optical pick up unit .
5. If the optical pick up is replaced, use the manufactures specified replacement pick up only.
6. Use of control or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

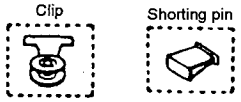
■ HANDLING PRECAUTIONS FOR TRAVERSE DECK

The laser diode in the traverse deck (optical pickup) may break down due to potential difference caused by static electricity of clothes or human body. So, be careful of electrostatic breakdown during repair of the traverse deck (optical pickup).

• Handling of traverse deck (optical pickup)

1. Do not subject the traverse deck (optical pickup) to static electricity as it ie extremely sensitive to electrical shock.
2. To prevent the breakdown of the laser diode, an antistatic shorting pin is inserted into the flexible board (FPC board). When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board (FPC board).
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

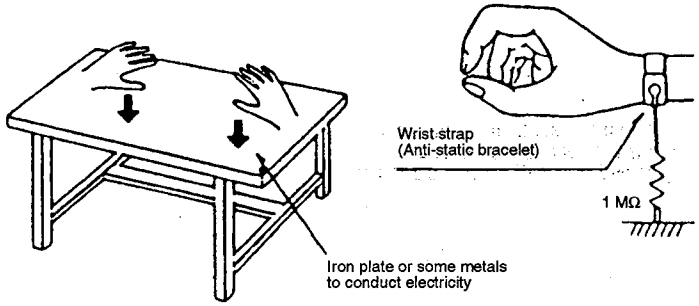




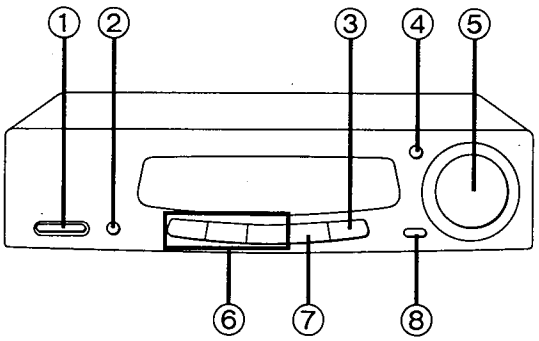
• Grounding for electrostatic breakdown prevention

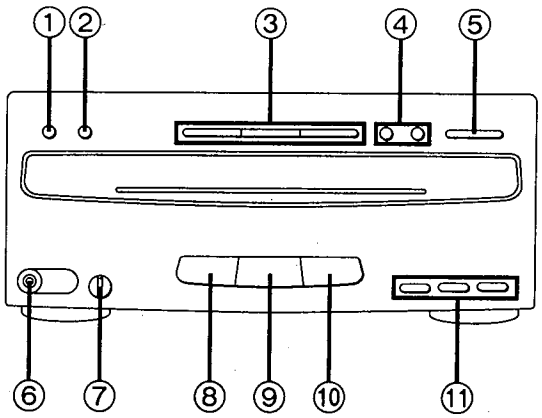
1. Human body grounding
   Use the anti-static wrist strap to discharge the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the traverse deck (optical pickup) is placed, and ground the sheet.

Caution :
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the traverse deck (optical pickup).



■ LOCATION OF CONTROLS





Tuner section

① Voice mute button (KARAOKE)
② CD display mode select button (CD DISPLAY)
③ FM mode/beat proof button (FM MODE/BP)
④ Setting button (SET)
⑤ Tuning/CD skip dial (TUNING/CD SKIP)
⑥ Input select buttons (TAPE, AUX, CD)
⑦ Tuner/band select button (TUNER/BAND)
⑧ Tuning mode select button (TUNING MODE)

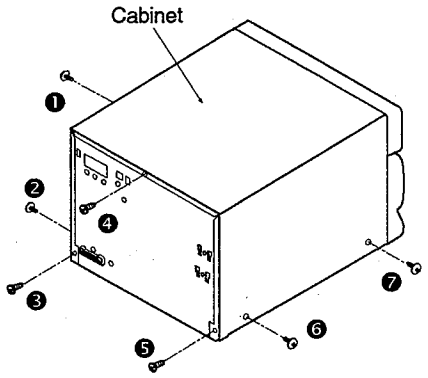
Compact disc changer section

① Repeat button (REPEAT)
② Random play button (RANDOM)
③ Disc buttons (DISC 1, DISC 2, DISC 3)
④ Skip/search buttons (⏮/◀◀, ▶▶/⏭)
⑤ Disc tray open/close button (⏏OPEN/CLOSE)
⑥ Microphone jack (MIC)
⑦ Microphone volume control (MIC VOL)
⑧ Stop button (□)
⑨ Pause button (▯▯)
⑩ Play button (▷)
⑪ Compact disc edit recording buttons (J.FIT, ALBUM, LAST FADE)

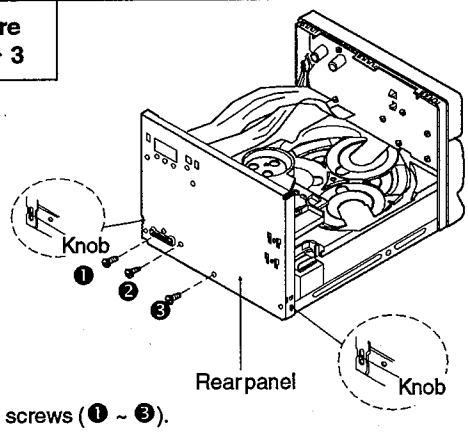
■ DISASSEMBLY INSTRUCTIONS

Warning : This product uses a laser diode. Refer to caution statements on page 2.
ACHTUNG: Die lasereinheit nicht zerlegen.
Die lasereheit dart nur gegen eine vom hersteller speziferte einheit ausgetauscht werden.
"ATTENTION SERVICER" Some chassis components may have sharp edges. Be careful when disassembling and servicing.

Ref. No. 1	Removal of the Cabinet
Procedure 1	• Remove 7 screws (❶ ~ ❼).

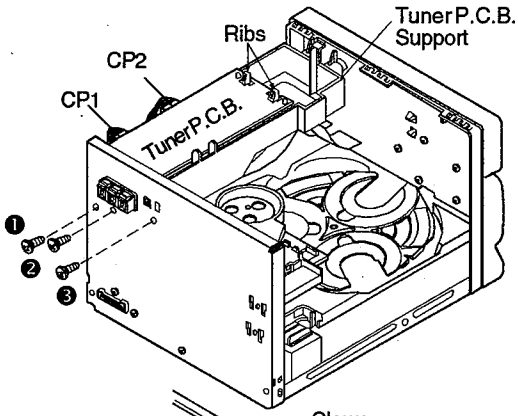


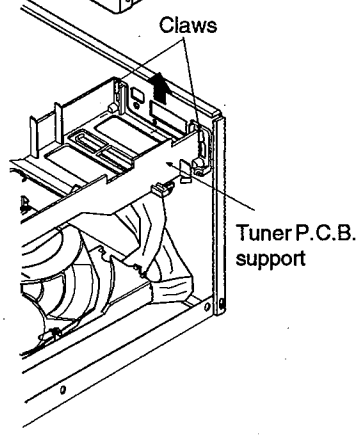
Ref. No. 3	Removal of the Rear Panel
Procedure 1 → 2 → 3	



1. Remove 3 screws (❶ ~ ❸).
2. Remove the rear panel by releasing it from the knobs of the bottom board.

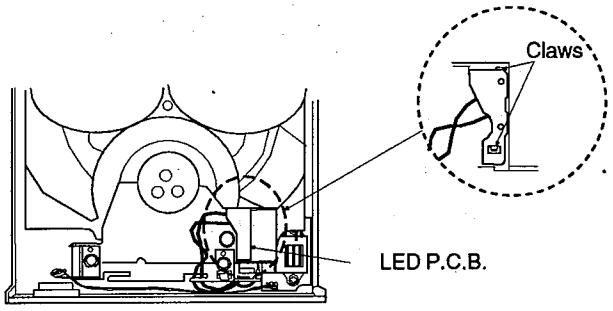
Ref. No. 2	Removal of the Tuner P.C.B. and Tuner P.C.B. Support
Procedure 1 → 2	1. Remove 3 screws (❶ ~ ❸). 2. Remove the wires W1 and W2 from the connectors CP1 and CP2 respectively. 3. Release 2 ribs and take out the tuner P.C.B.



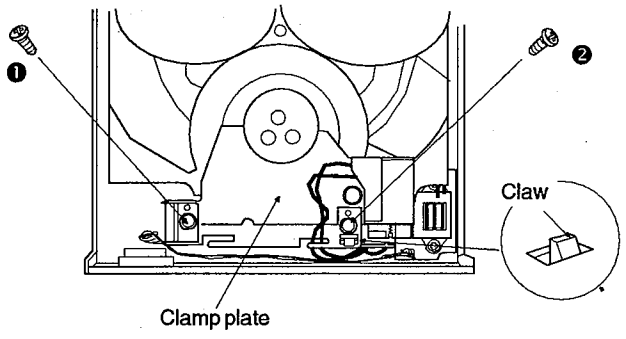


4. Release the 2 claws from the rear panel by lifting up the rear end of the tuner P.C.B. support.

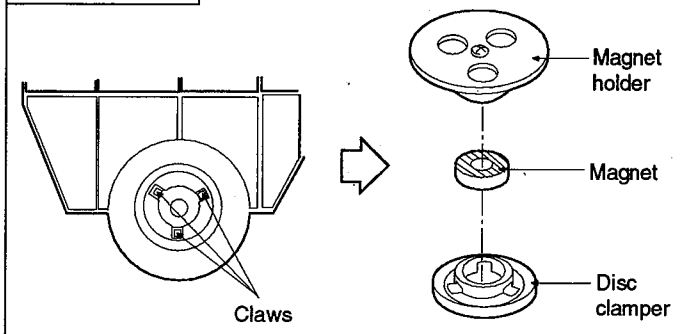
Ref. No. 4	Removal of the LED P.C.B.
Procedure 1 → 4	• Release 2 claws.



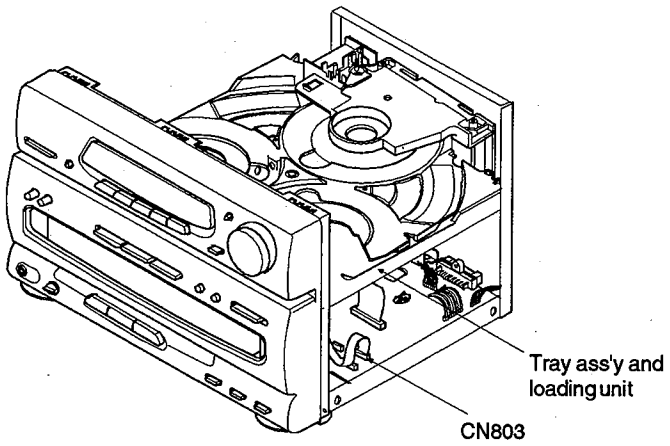
Ref. No. 5	Removal of the Clamp Plate
Procedure 1 → 2 → 4 → 5	1. Remove 2 screws (❶, ❷). 2. Release 1 claw.



Ref. No. 6	Removal of the Magnet Holder, magnet and Disc Clamper
Procedure 1 → 2 → 4 → 5 → 6	

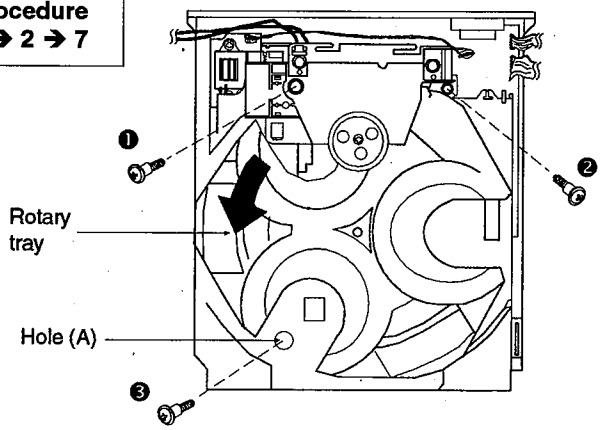


- Release 3 claws



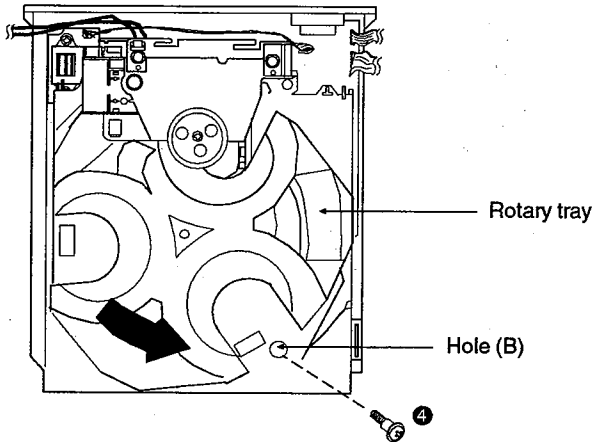
6. Lift up the tray ass'y and the loading unit and then remove 1 wire connector CN803.

Ref. No. 7	Removal of the Tray Ass'y and Loading Unit
Procedure 1 → 2 → 7	



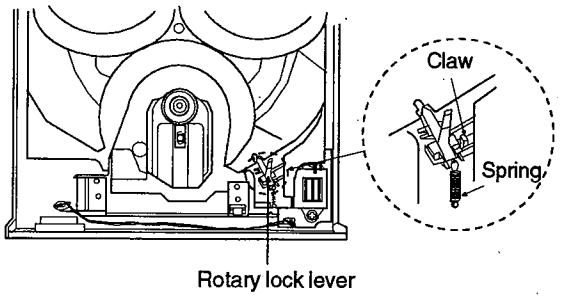
1. Remove 2 screws (❶, ❷).
2. Rotate the ratary tray to the position that can be confirmed the hole (A).
3. Remove 1 screw (❸).

Note:
In case that screw ❸ cannot be removed due to narrowness of hole (A), refer to the instruction of Ref. No. 13, remove the tray base, and remove screw ❸.

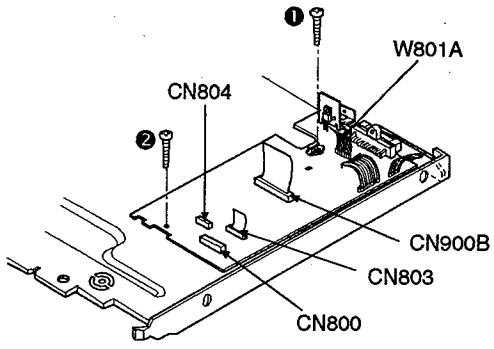


4. Rotate the ratary tray to the further position that can be confirmed the hole (B).
5. Remove 1 screw (❹).

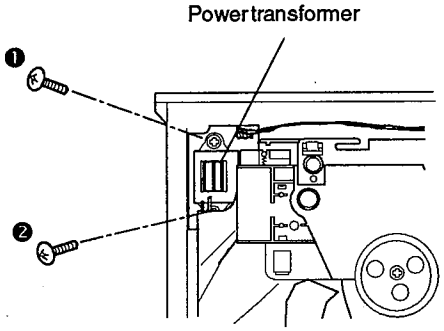
Ref. No. 8	Removal of the Rotary Lock Lever
Procedure 1 → 2 → 4 → 5 → 8	1. Remove the spring. 2. Release the claw.



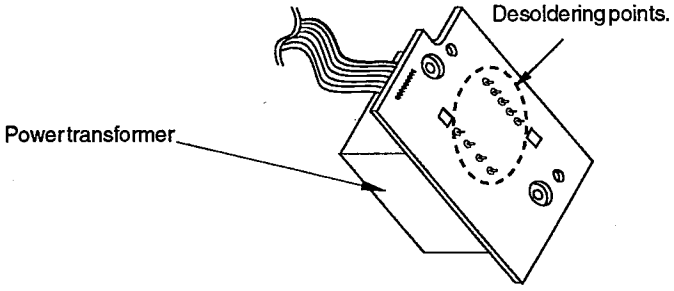
Ref. No. 9	Removal of the Main P.C.B.
Procedure 1 → 2 → 3 → 9	1. Remove 4 cables from connectors CN800, CN803, CN804 and CN900B. 2. Remove 2 screws (❶, ❷). 3. Remove the cable W801A by desoldering it.



Ref. No. 10	Removal of the Power Transformer
Procedure 1 → 10	

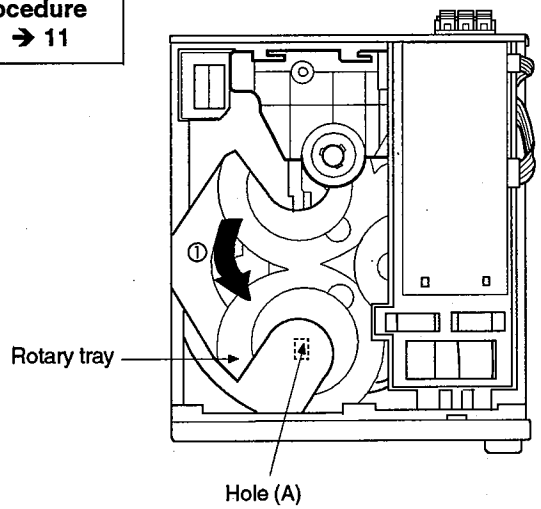


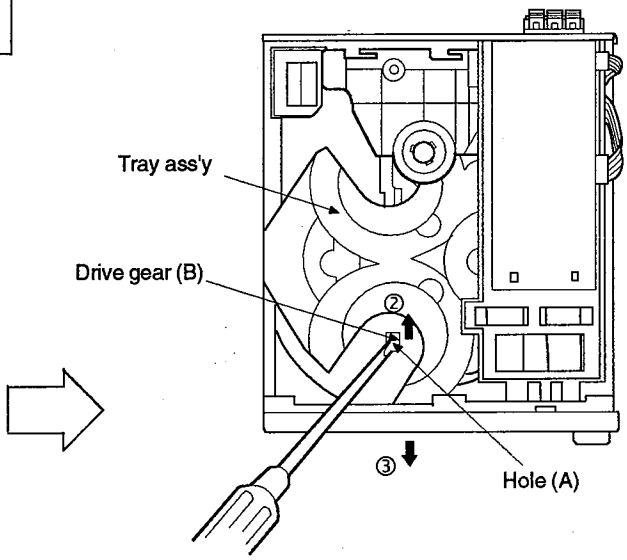
1. Remove 2 screws (❶, ❷).



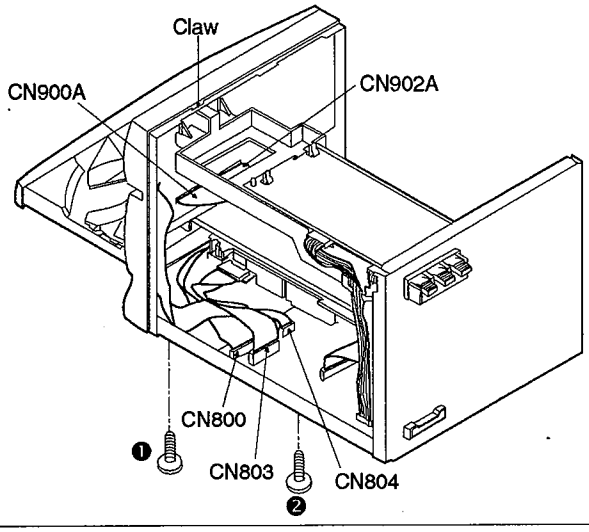
2. Desolder 9 points and take out the Power Transformer.

Ref. No. 11	Removal of the Front Panel
Procedure 1 → 11	

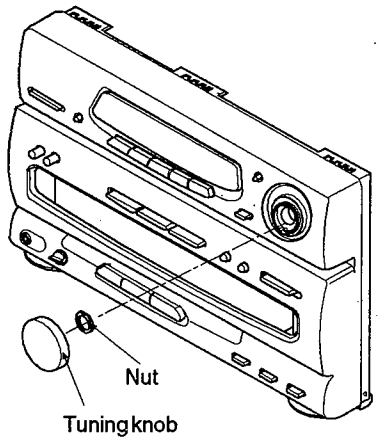




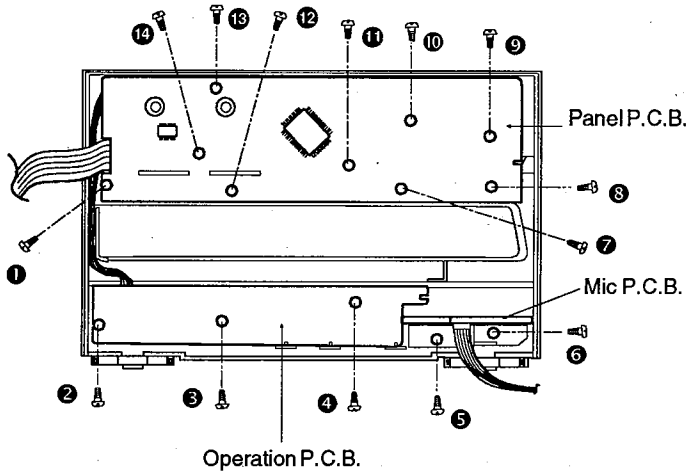
1. Rotate the ratary tray to the position that can be confirmed the hole (A) in the direction of arrow ①.
2. Pressing the drive gear (B) in the direction of arrow ② with inserting the (–) screwdriver into the hole (A), the tray ass'y will move slightly in the direction of arrow③. Then, pull out the tray ass'y in the direction of the arrow ③.
3. Remove 5 flat cables from connectors CN900A, CN902A, CN800, CN803 and CN804.
4. Remove 2 screws (❶, ❷) from the bottom of the front panel.
5. Release 1 claw and pull out the front panel.



Ref. No. 12	Removal of the MIC P.C.B., Panel P.C.B. and Operation P.C.B.
Procedure 1 → 11 → 12	

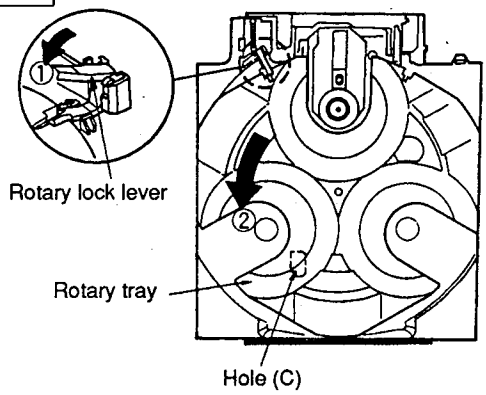


1. Remove the tuning knob with a flat head (–) screwdriver.
2. Unscrew the nut.

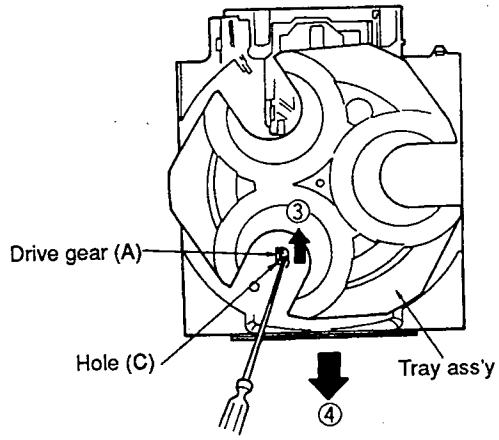


3. Remove 14 screws (❶ ~ ⓮).

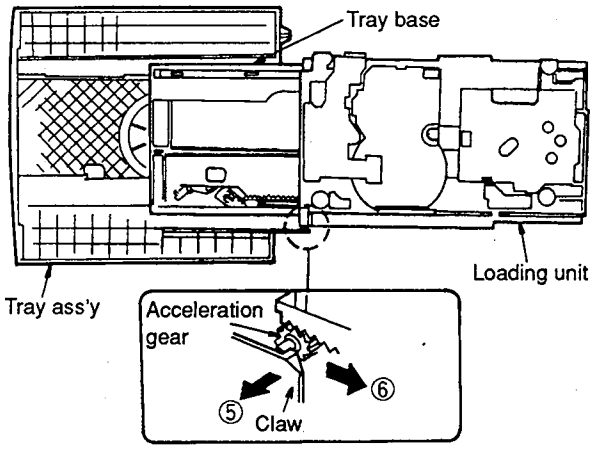
Ref. No. 13	Removal of the Loading Unit and Tray base
Procedure 1 →11 → 13	



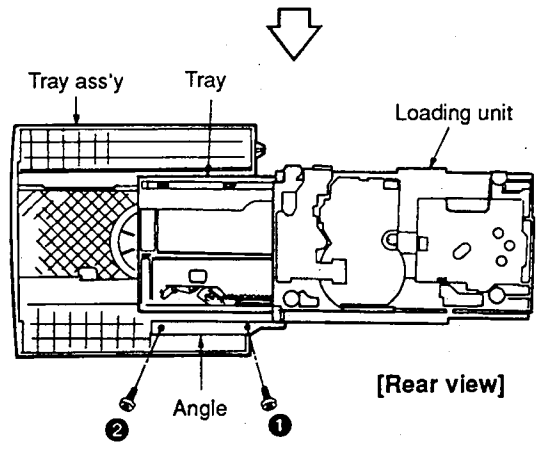
1. While pressing the rotary lock lever in the direction of arrow ① and then rotate the rotary tray to the position that can be confirmed the hole (C) in the direction of arrow ②.



2. Pressing the drive gear (A) in the direction of arrow ③ with inserting the (–) screwdriver in the hole (C), the tray ass'y moves slightly in the direction of arrow ④. Then, pull the tray ass'y in the direction of arrow ④.



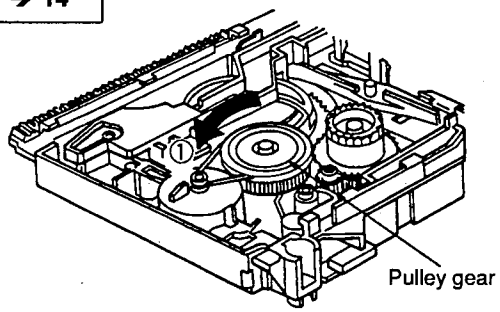
5. Release the claw in the direction of arrow ⑤ and then remove the acceleration gear in the direction of arrow ⑥.



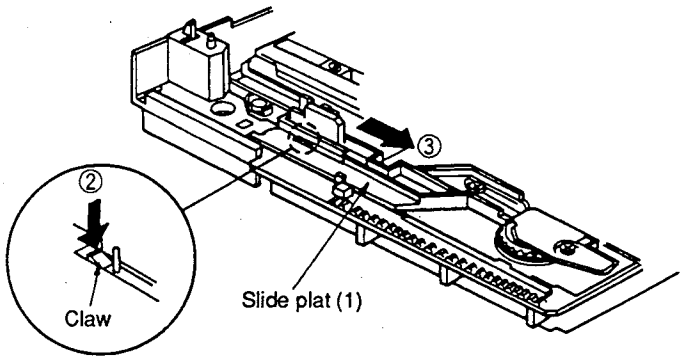
1. Remove the 2 screws (❶, ❷).
2. Remove the angle.

Ref. No. 14	Removal of the Travese Deck and Conversion Lever

Procedure
1 → 4 → 5 → 7 → 13 → 14



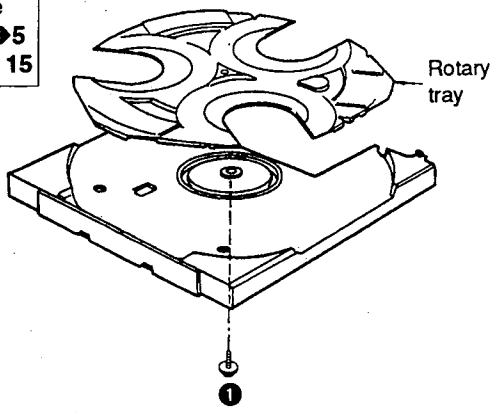
1.Rotate the pulley gear to full position in the direction of arrow ①.



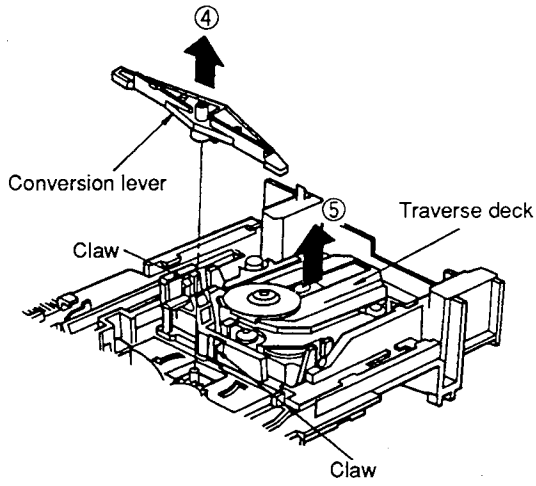
2. Push the claw in the direction of arrow ②, and then move the slide plate (1) in the direction of arrow ③.

Ref. No. 15	Removal of the Rotary Tray

Procedure
1 → 2 → 4 → 5 → 7 → 13 → 15



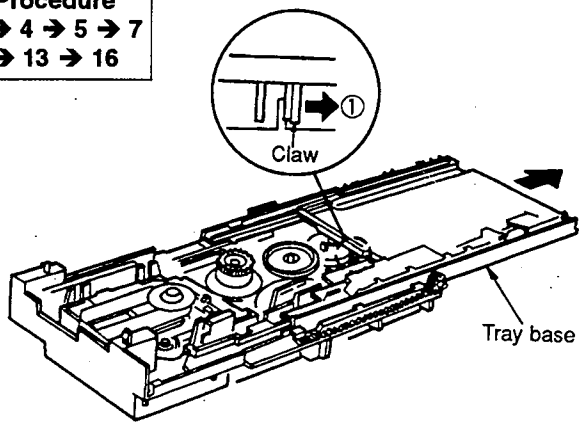
• Remove the 1 screw (❶).



3. Remove the conversion lever in the direction of arrow ④.
4. Release the claw and then remove the traverse deck in the direction of arrow ⑤.

Ref. No. 16	Removal of the Tray Base

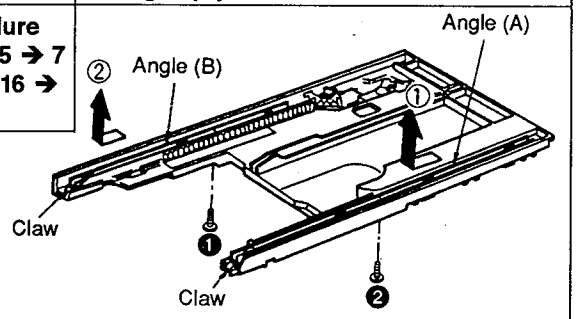
Procedure
1 → 4 → 5 → 7 → 13 → 16



• Release the claw in the direction of arrow ① and then remove the tray base in the direction of arrow ②.

Ref. No. 17	Removal of the Angle (A) and Angle (B)

Procedure
1 → 4 → 5 → 7 → 13 → 16 → 17



■ Removal of the angle (A)

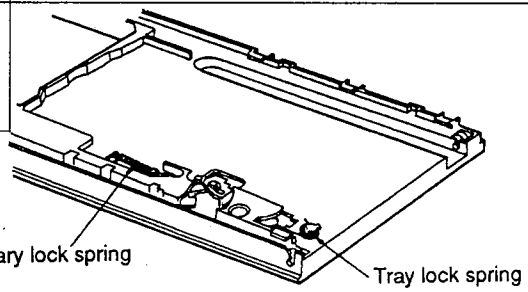
1. Remove the 1 screw (❶).
2. Release the claw and then remove the angle (A) in the direction of arrow ①.

■ Removal of the angle (B)

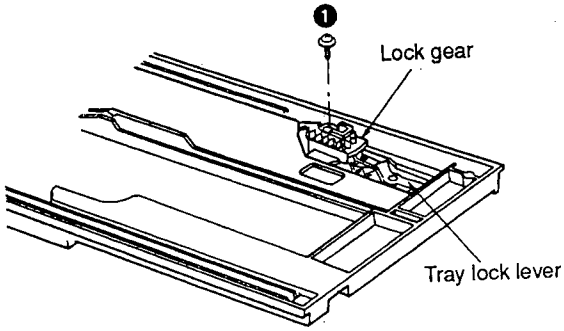
1. Remove the 1 screw (❷).
2. Release the claw and then remove the angle (B) in the direction of arrow ②.

Ref. No. 18	Removal of the Tray Lock and Lock Gear

Procedure
1 → 4 → 5 → 7 → 13 → 16 → 18



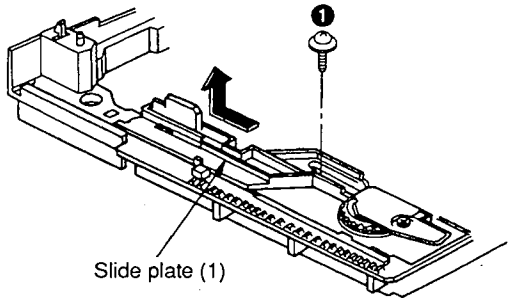
1. Remove the rotary lock spring and tray lock spring.



2. Remove the 1 screw (❶).

Ref. No. 19	Removal of the Slide Plate (1)

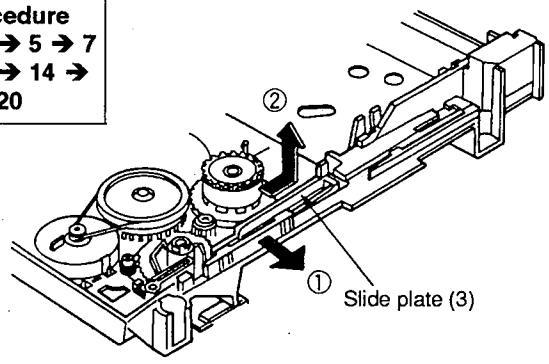
Procedure
1 → 2 → 4 → 5 → 7 → 13 → 14 → 19



1. Remove the 1 screw (❶).
2. Remove the slide plate (1) in the direction of arrow.

Ref. No. 20	Removal of the Slide Plate (3)

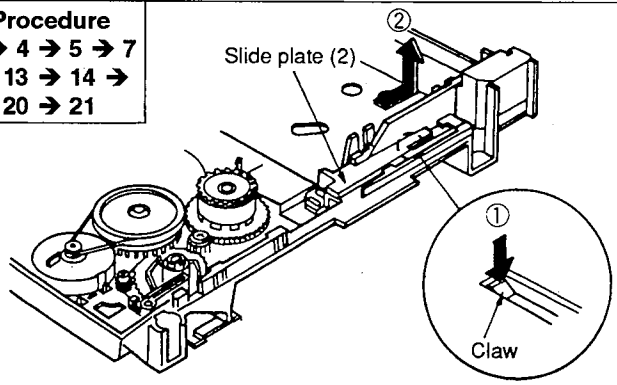
Procedure
1 → 4 → 5 → 7 → 13 → 14 → 20



• Push the slide plate (3) in the direction of arrow ①, and then remove it in the direction of arrow ②.

Ref. No. 21	Removal of the Slide Plate (2)

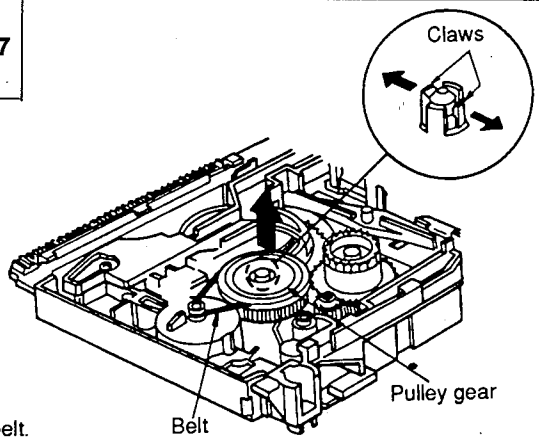
Procedure
1 → 4 → 5 → 7 → 13 → 14 → 20 → 21



• Push the claw in the direction of arrow ①, and then remove the slide plate (2) in the direction of arrow ②.

Ref. No. 22	Removal of the Pulley Gear

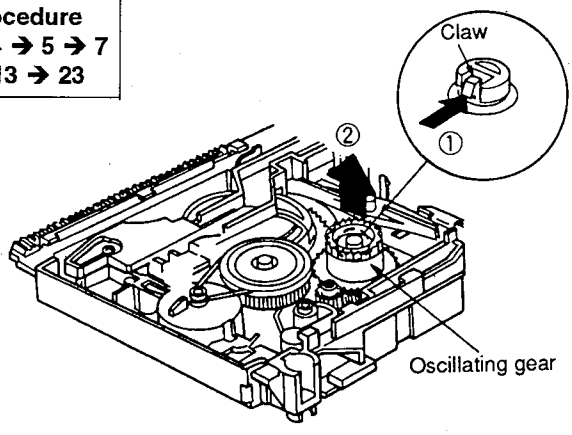
Procedure
1 → 4 → 5 → 7 → 13 → 22



1. Remove the belt.
2. Release the 2 claws and then remove the pulley gear in the direction of arrow.

Ref. No. 23	Removal of the Oscillating Gear

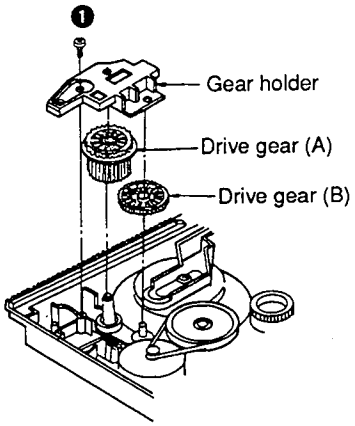
Procedure
1 → 4 → 5 → 7 → 13 → 23



• Release the claw in the direction of arrow ① and then remove the oscillating gear in the direction of arrow ②.

Ref. No. 24 — **Removal of the Gear Holder, Drive Gear (A) and Drive Gear (B)**

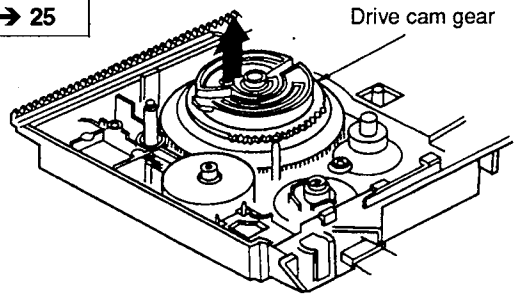
Procedure
1 → 2 → 4 → 5 → 7 → 13 → 24



1. Remove the 1 screw (❶).
2. Remove the gear holder, drive gear (A) and drive gear (B).

Ref. No. 25 — **Removal of the Drive Cam Gear**

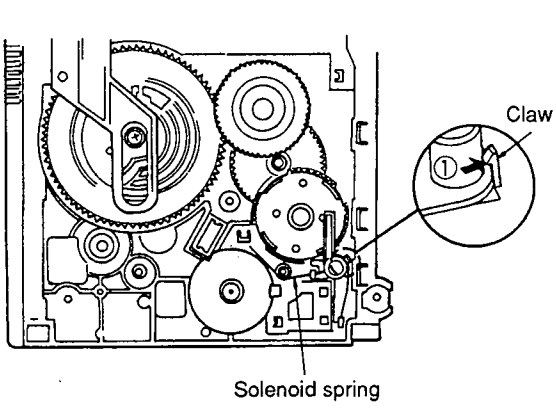
Procedure
1 → 2 → 4 → 5 → 7 → 13 → 14 → 19 → 22 → 23 → 24 → 25

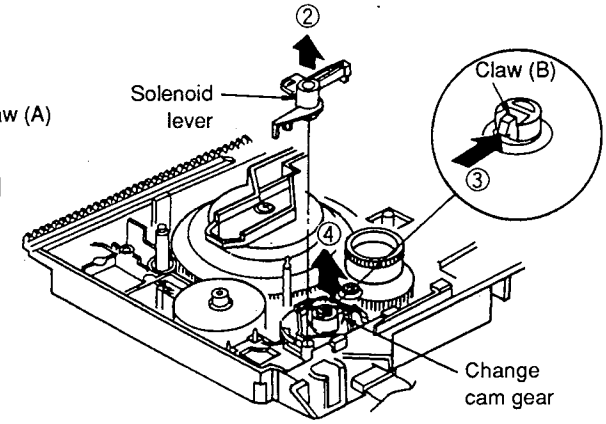


• Remove the drive cam gear in the direction of arrow.

Ref. No. 26 — **Removal of the Change Cam Gear**

Procedure
1 → 2 → 4 → 5 → 7 → 13 → 14 → 20 → 22 → 26



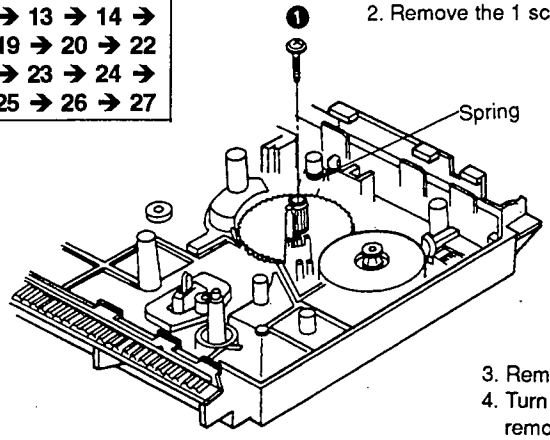


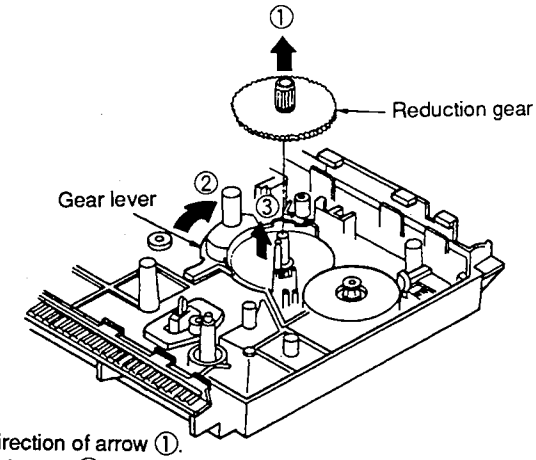
1. Remove the solenoid spring.
2. Release the claw (A) in the direction of arrow ① and then remove the solenoid lever in the direction of arrow ②.
3. Release the claw in the direction of arrow ③ and then remove the change cam gear in the direction of arrow ④.

Ref. No. 27 — **Removal of the Reduction Gear and Gear Lever**

Procedure
1 → 4 → 5 → 7 → 13 → 14 → 19 → 20 → 22 → 23 → 24 → 25 → 26 → 27

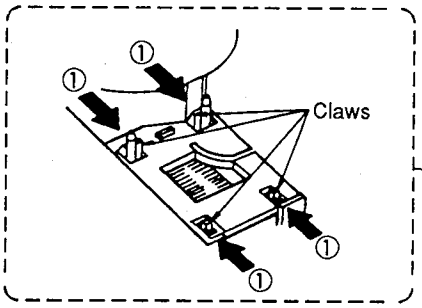
1. Remove the spring.
2. Remove the 1 screw (❶).

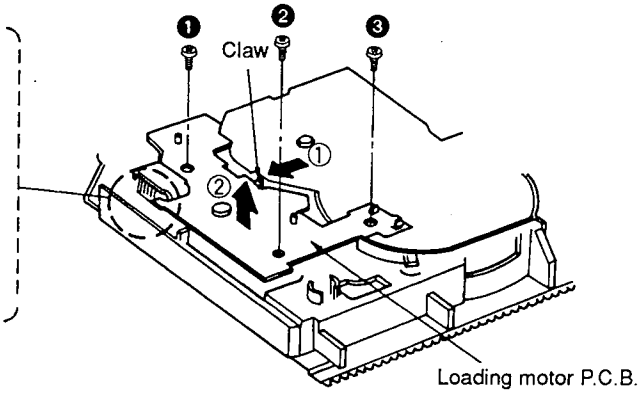




3. Remove the reduction gear in the direction of arrow ①.
4. Turn the gear lever in the direction of arrow ②, and then remove it in the direction of arrow ③.

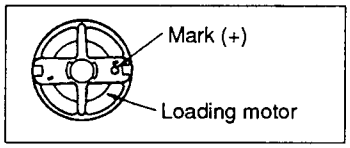
Ref. No. 28	Removal of the Loading Motor P.C.B.
Procedure 1 → 4 → 5 → 7 → 13 → 14 → 19 → 20 → 21 → 22 → 23 → 24 → 25 → 26 → 28	

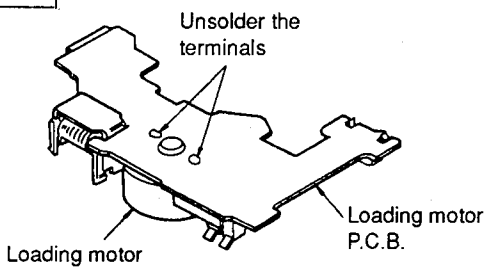




1. Remove the 3 screws (❶~❸).
2. Release the 5 claws in the direction of arrow ①.
3. Remove the loading motor P.C.B. in the direction of arrow ②.

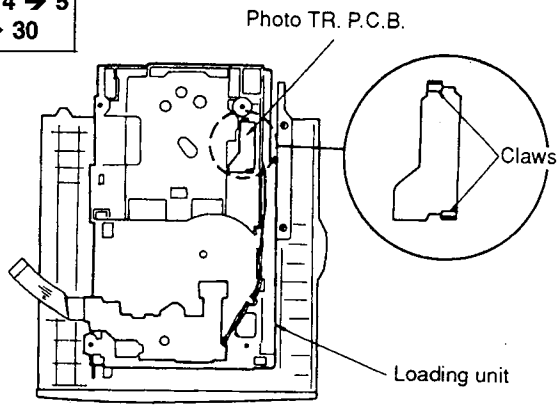
Ref. No. 29	Removal of the Loading Motor
Procedure 1 → 4 → 5 → 7 → 13 → 14 → 19 → 20 → 21 → 22 → 23 → 24 → 25 → 26 → 28 → 29	





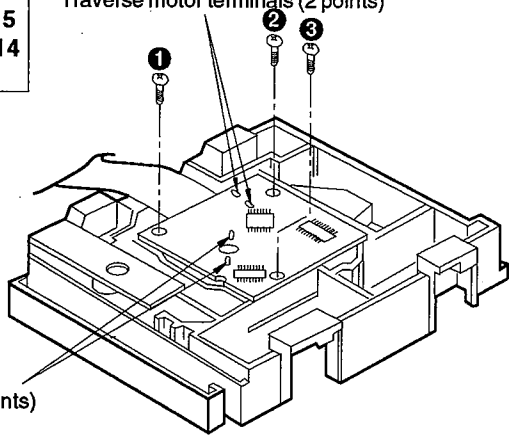
• Unsolder the terminals of the loading motor.

Ref. No. 30	Removal of the Photo Transistor P.C.B.
Procedure 1 → 2 → 4 → 5 → 7 → 30	



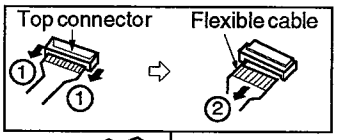
• Release the 2 claws.

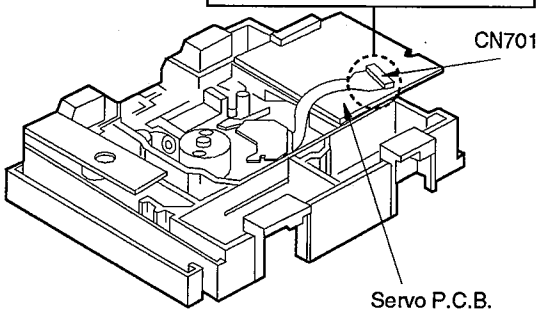
Ref. No. 31	Removal of the Servo P.C.B.
Procedure 1 → 2 → 4 → 5 → 7 → 13 → 14 → 31	



1. Remove the 3 screws (❶ ~ ❸).
2. Unsolder the spindle motor terminals (2 points).
3. Unsolder the traverse motor terminals (2 points).

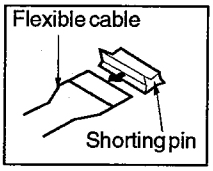
❄ Push the top of the connector in the direction of arrow ①, and then pull out the flexible cable in the direction of arrow ②.





4. Remove the FPC board (CN701).

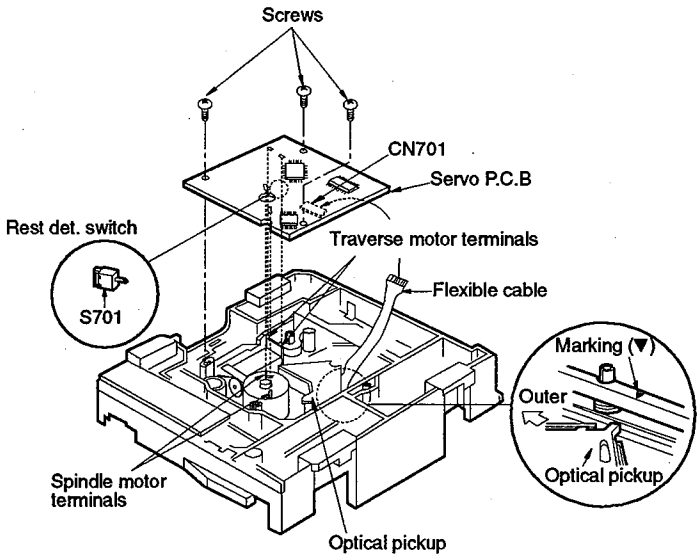
Note: Insert a shorting pin into the traverse unit flexible cable. (Refer to "handling precautions for traverse deck" on page 2.)



- **Installing Servo P.C.B.**

1. Before installing the servo P.C.B., move the optical pickup toward the outer edge from the mark "▲".
   [Otherwise, the rest detect switch (S701) mounted on the servo P.C.B. may be damaged.]
2. Connect the flexible cable to the connector (CN701).
3. Install the servo P.C.B. in the traverse deck unit with the three screws.
4. Solder the two terminals of the traverse motor and the two terminals of the spindle motor.

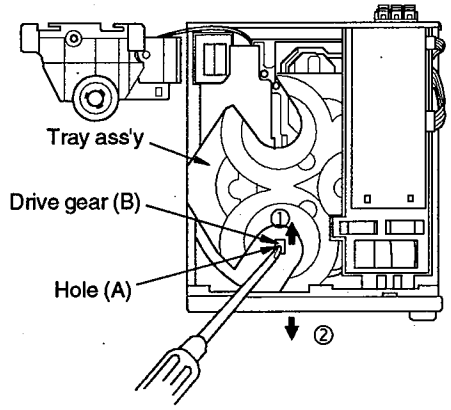
Note: Connect the flexible cable to the connector (CN701) firmly.
Tighthen the 3 screws before soldering the terminals.



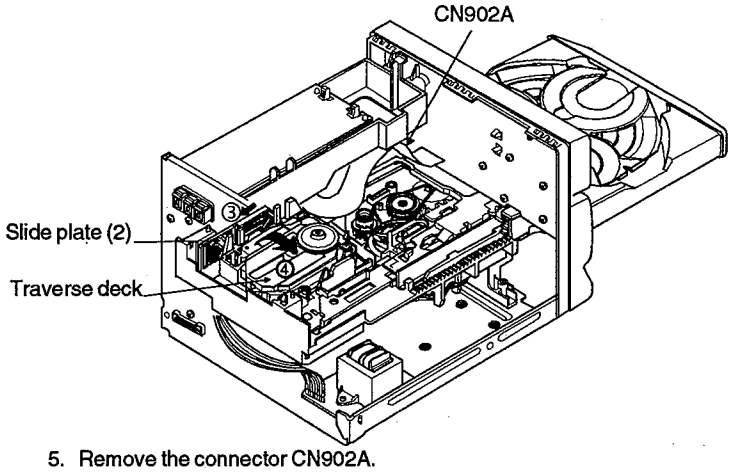
■ How to Check the Servo and Main P.C.B.

• Check the servo P.C.B.

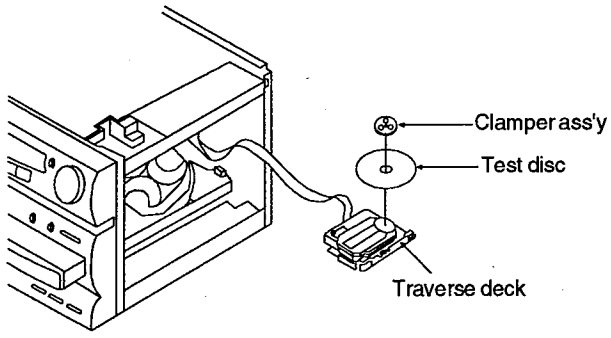
1. Remove the cabinet. (See Ref. No. 1 of the disassembly instructions.)
2. Remove the clamp plate. (See Ref. No. 5 of the disassembly instruction.)
3. Remove the magnet holder, magnet and disc clamper. (See Ref. No. 6 of the disassembly instruction.)



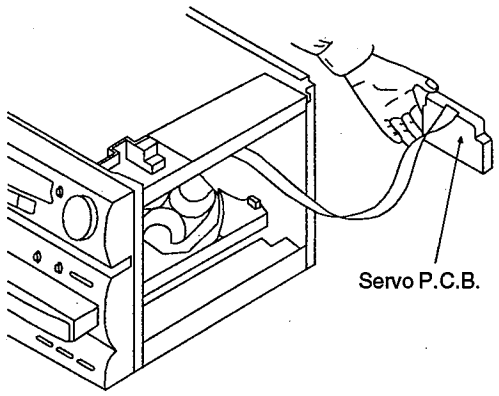
4. Pressing the drive gear (B) in the direction of arrow ① with the inserting the (–) screwdriver in the hole (A), the tray ass'y will move slightly in the direction of arrow ②. Then, pull out the tray ass'y in the direction of arrow ②.



5. Remove the connector CN902A.
6. Pressing the slide plate (2) in the direction of arrow ③, and then remove the traverse deck in the direction of arrow ④.

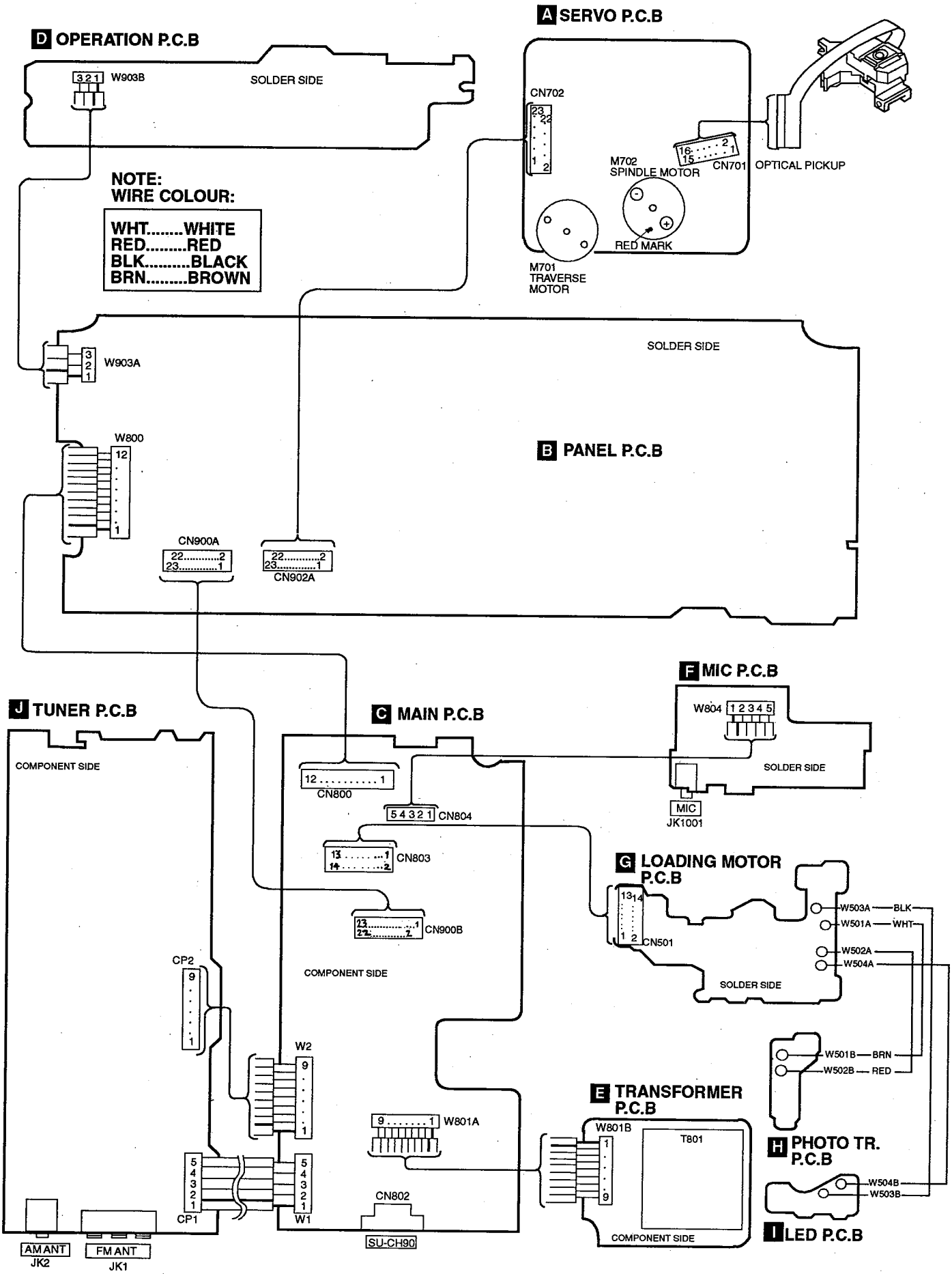


7. Place the test disc and secure it by using the clamper ass'y.
8. Restore the tray ass'y.
9. Reconnect the connector CN902A.



10. When checking the soldered surface of the servo P.C.B., do as shown above.

■ WIRING CONNECTION DIAGRAM



■ MEASUREMENTS AND ADJUSTMENTS

Cautions:
- It is very dangerous to look at or touch the laser beam. (laser radiation is invisible.) With the unit turned "on", laser radiation is emitted from the pickup lens.
- Avoid exposure to the laser beam, especially when performing adjustment.

This unit (SL-CH90/SL-CH90T) is actuated by power supply from the cassette deck/amplifier SU-CH90/SU-CH90T. If you wish to actuate this unit without using the cassette deck/amplifer SU-CH90/SU-CH90T for checking or repairing, follow below procedure

• Apply AC 11 V between AC (Z801) – GND (J810) – AC (Z802).

• To Check Signals

Connect the oscilloscope or the speaker with built-in amplifier to the section between LINE OUT (Lch) of the resistor R845 and the GND point of the jumper J810 as well as the section between LINE OUT (Rch) of the resistor R844 and the GND point of the jumper J810 and check if the signals are outputing from this unit. **(Shown in fig. 1)**

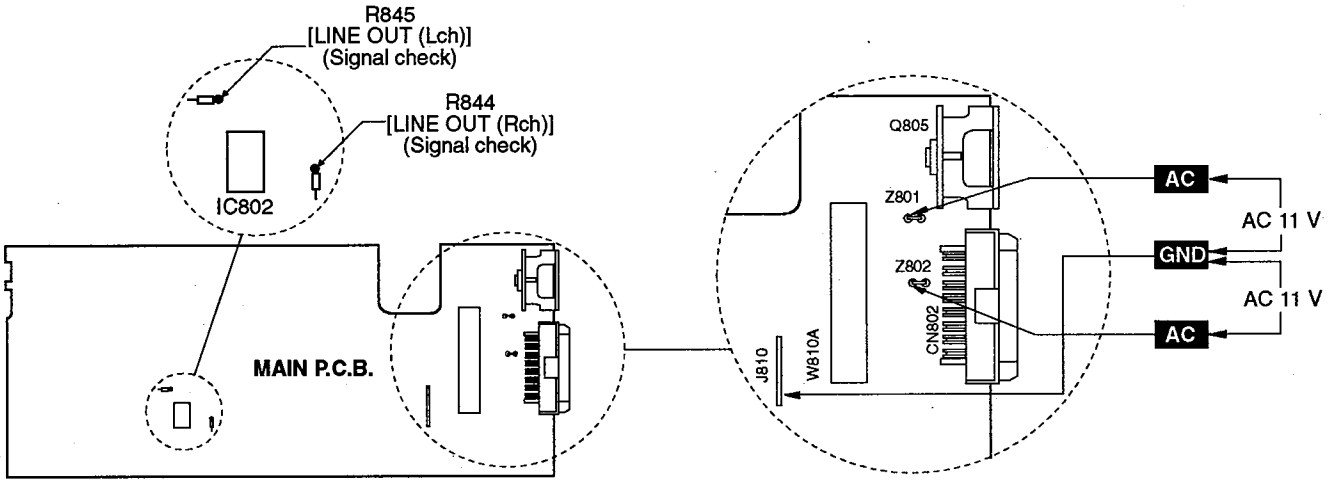


Fig.1

■ ALIGNMENT POINTS

< CD PLAYER SECTION >

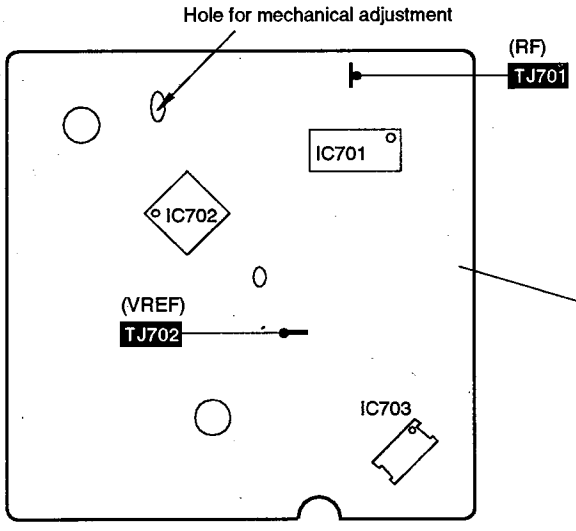


Fig.2

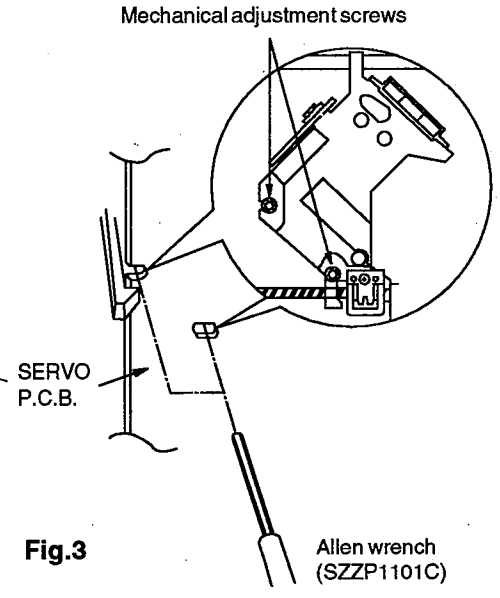


Fig.3

■ DISPLAY FUNCTIONS OF AUTOMATICALLY-ADJUSTED RESULTS (SELF-CHECK FUNCTION)

The unit contains a function which displays the result of the automatically adjustment of the servo circuits (tracking, focus servo,etc.) as an error code on the FL display.
The error code display serves as a repair guide showing the automatically adjustment circuit is at fault. The procedures for displaying the error codes are given below.

■ Procedures to display the error code

1. Check the servo P.C.B. as shown in the Disassembly Instructions, "How to check the Servo P.C.B.".
2. Switch the unit to ON. (See page 36)
3. Press the "CD" key to select CD function.
4. Press the "□" (CD STOP) key on the unit, then simultaneously press " ▶▶/▶▶| " key for about 2 seconds.
5. The **"C - 2"** will appear on the FL display for 2 seconds (self-check function mode is activated).
6. The **"E-00"** will appear on the FL display if no error is found.
7. The error code provides a rough indication of which servo circuit is malfunctioning.

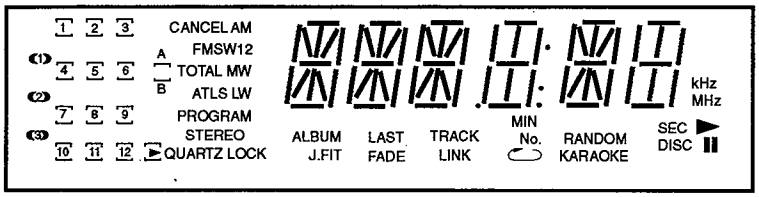
■ Error code based troubleshooting

- The unit is satisfactory if the error code is **E-00.**
- Before testing , make sure that the test disc is free of scratches and dirt and optical pickup is clean.

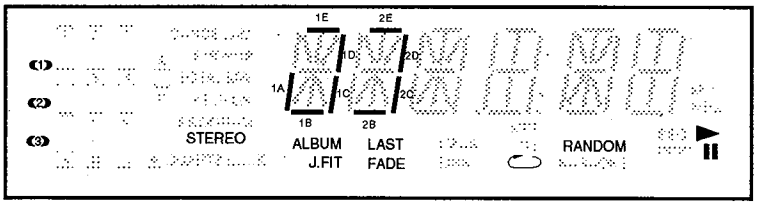
FL error code display	Symptom	Probable cause	Signal to check		Normal the values of voltage and waveform	
			Signal name	Location	PLAY	STOP
E01	Focus and tracking offset adjustments did not complete in the specified time period.	① Clocks X1 and X2, power supply VDD, and reset/RST, all on IC702. ② MDATA, MCLK, MLD and SENSE signals to/from the mechanism controller.	MDATA	IC702 ⑧ pin	PLAY 4.8V 0V T=13.6 ms	4.8V
			MCLK	IC702 ⑦ pin	PLAY 4.8V 0V T=13.6 ms	4.8V
			MLD	IC702 ⑨ pin		
			SENSE	IC702 ⑩ pin	0V	0V
			/RST	IC702 ⑱ pin	4.9V	4.9V
			X1	IC702 ⑱ pin	1.1V p-p F=16.9344 MHz	1.1V p-p F=16.9344 MHz
			X2	IC702 ⑲ pin	4.8V p-p F=16.9344 MHz	4.8V p-p F=16.9344 MHz
E03 E05 E07 E09 E0B E0D E0F	Disc play unstable	① Scratches or contaminants on disc surface. ② Focus and tracking servo circuits (check waveforms, voltages, and part constants). ③ Spindle driver circuit. ④ Optical pickup.	FE	IC702 ㉜ pin	PLAY 0.3V p-p 2ms 0.1V/DIV	2.4V
			TE	IC702 ㉝ pin	PLAY 0.4V p-p 2ms 0.1V/DIV	2.4V
			FOD	IC702 ㉘ pin	2.4V	2.4V
			TRD	IC702 ㉗ pin	2.4V	2.4V
			KICK	IC702 ㉖ pin	2.4V	2.4V
			/FLOCK	IC702 ⑪ pin	0V	4.9V
			/RF DET	IC702 ㊳ pin	0V	4.8V
			RF	TJ701	PLAY 1.2V p-p 0.5μs 0.1V/DIV	3.4V
			STAT	IC702 ⑰ pin	3.5V	0V

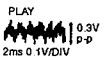
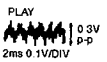
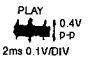
■ GENERAL INSPECTION

FUNCTION	CHECKING	REMARKS
1. To enter TEST MODE.	• Press the "CD" key to select CD position. • Press the " □ " (CD STOP) key on the SL-CH90/SL-CH90T unit, then simultaneously press the "REPEAT" key on the SL-CH90/SL-CH90T unit for about 2 seconds.	• All segments of FL display will light up.
2. To check for all connection and FL Display connection.	• Press the "CD DISPLAY" key on the SL-CH90/SL-CH90T unit. • Press every key(except "CD DISPLAY" and "SET" keys) on the SL-CH90/SL-CH90T unit one by one . • The chart below summarizes the Display segment corresponding to each key pressed.	• FL Display will black out. • FL Display will have its segment lighted up one by one.
3. To check for tuner auto tuning.	• Press the "TUNER/BAND" key to select "TUNER" position. • Press the " □ " (CD STOP) key on the SL-CH90/SL-CH90T unit, then simultaneously press the "TUNER/BAND" key for about 2 seconds. • Press the "⏮/◀◀" or "▶▶/⏭" on the remote control transmitter.	• "C-3" will appear on the FL display for about 2 seconds. • Tuner band will set to "FM" and start to auto tuning in each direction.
4. To exit from TEST MODE.	• Press the Power key on the SU-CH90/SU-CH90T unit, or press the " □ " (CD STOP) on the remote control transmitter, or press the "SET" key on the SL-CH90/SL-CH90T unit, or pull out the Power Supply Plug. • Pull out the Power Supply Plug to set the "COLD START" from the above TEST MODE. (The memory will be set to the initial condition on the next AC power on.)	



Segment Light Up	Key Pressed (From SL-CH90/SL-CH90T unit)	Segment Light Up	Key Pressed (From SL-CH90/SL-CH90T unit)
⊂⊃	REPEAT	2C	⏮
RANDOM	RANDOM	(3)	DISC3
2B	□	(2)	DISC2
▯▯	▯▯	(1)	DISC1
▷	▷	1A	TAPE
J.FIT	J.FIT	1B	AUX
ALBUM	ALBUM	1C	CD
LAST FADE	LAST FADE	1D	TUNER/BAND
2E	⏏ OPEN/CLOSE	STEREO	FM MODE/BP
2D	⏭	1E	TUNING MODE



FL error code display	Symptom	Probable cause	Signal to check		Normal the values of voltage and waveform	
			Signal name	Location	PLAY	STOP
E04 E06 E0C E0E	Best Eye (PD Balance) adjustment did not complete in specified time period.	① Scratches or contaminants on disc surface. ② Focus and tracking servo circuits (check waveforms, voltages, and part constants). ③ Optical pickup.	FBAL	IC702 ㉚ pin	2.5 ± 1.25V	2.5 ± 1.25V
			RF	TJ701		3.4V
			FE	IC702 ㉜ pin		0V
			/TLOCK	IC702 ⑫ pin	0V	0V
			OFT	IC702 ㊱ pin	0V	0V
E08 E0A	Focus or tracking gain adjustment did not complete in the specified time period.	① Scratches or contaminants on disc surface. ② Focus and tracking servo circuits (check waveforms, voltages, and part constants). ③ Optical pickup.	FE	IC702 ㉜ pin		2.4V
			TE	IC702 ㉝ pin		2.4V
			/TLOCK	IC702 ⑫ pin	0V	0V
			OFT	IC702 ㊱ pin	0V	0V

■ TERMINAL FUNCTION OF IC'S

• IC701 (AN8802SCE1V)

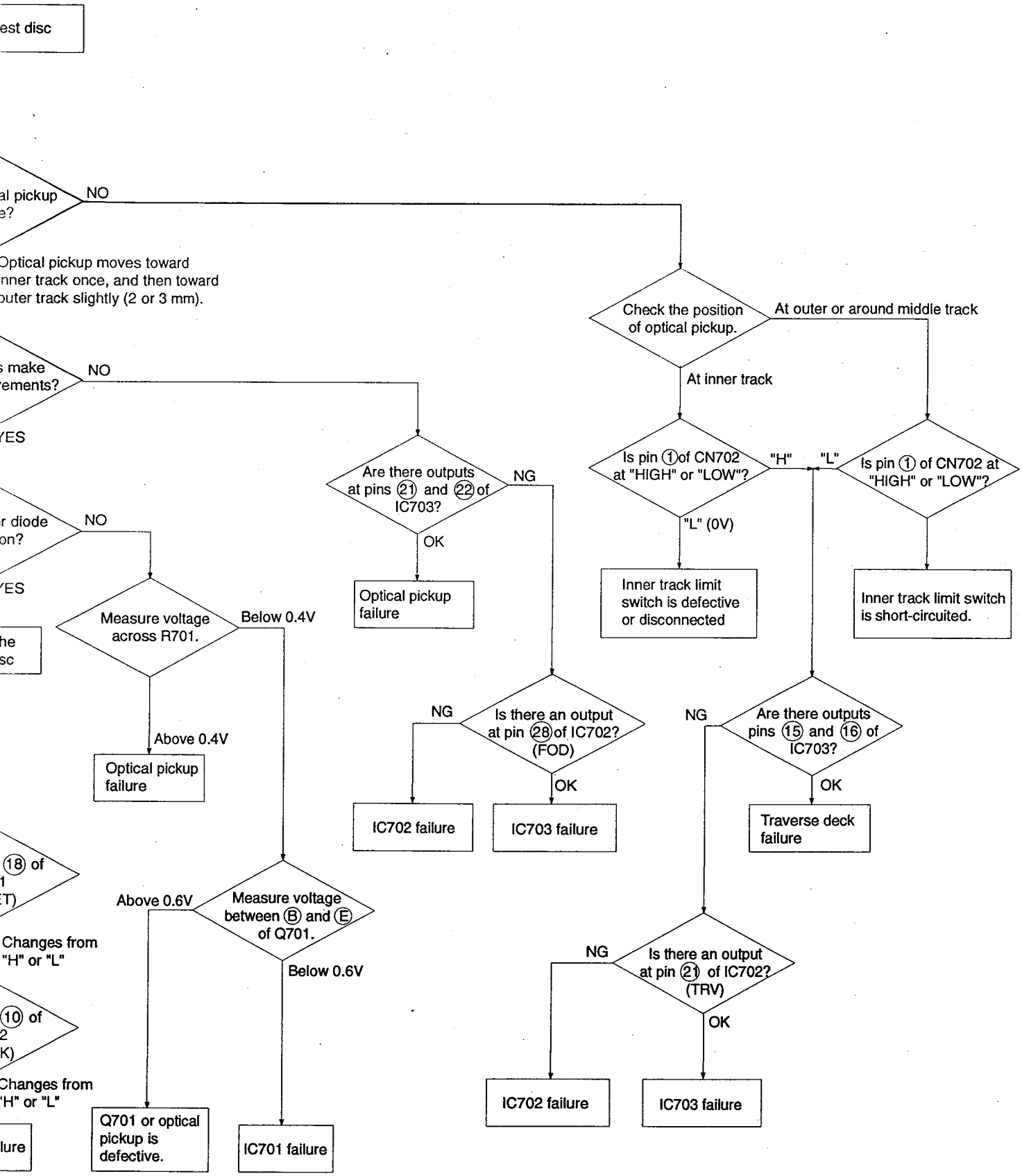
Pin No.	Mark	I/O	Function
1	PDAD	I	PDA channel signal input with delay
2	PDA	I	PDA channel signal input without delay
3	LPD	I	Laser PD connection
4	LD	O	Power supply for LD driving
5	AMPI	I	RF amplifier input
6	VCC	I	Power supply connection
7	AMPO	O	RF amplifier output (Not used, open)
8	CAGC	I	AGC loop filter connection
9	ARF	O	RF AGC output
10	CENV	I	Capacitor connection for RF detection
11	CEA	I	Capacitor connection for HPF amplifier
12	GND	—	Ground connection
13	LDON	I	ON/OFF input of LD APC("H" : ON, "L" : OFF)
14	TES	I	Tracking error shunt signal input
15	PLAY	I	Play signal input ("H" : PLAY)
16	WVEL	I	Double speed ("H" : double, "L" : single)

Pin No.	Mark	I/O	Function
17	BDO	O	Dropout detection control
18	/RFDET	O	RF detection signal ("L" : detection)
19	CROSS	O	Tracking error zero cross output
20	OFTR	O	Off-track detection ("H" : detection)
21	VDET	O	Vibration detection signal output("H" : detection)
22	ENV	O	Envelope output terminal
23	TEBPF	I	Vibration detection signal input
24	TE	O	Tracking error signal output
25	FE	O	Focus error signal output
26	PTO	O	Potentioamplifier inversion input (Not used, open)
27	PTI	I	Potentioamplifier inversion output (Not used, open)
28	TBAL	I	Tracking balance signal input
29	FBAL	I	Focus balance signal input
30	VREF	O	Reference voltage output
31	PDB	I	Photo detection Bch input without delay
32	PDBD	I	Photo detection Bch input with delay

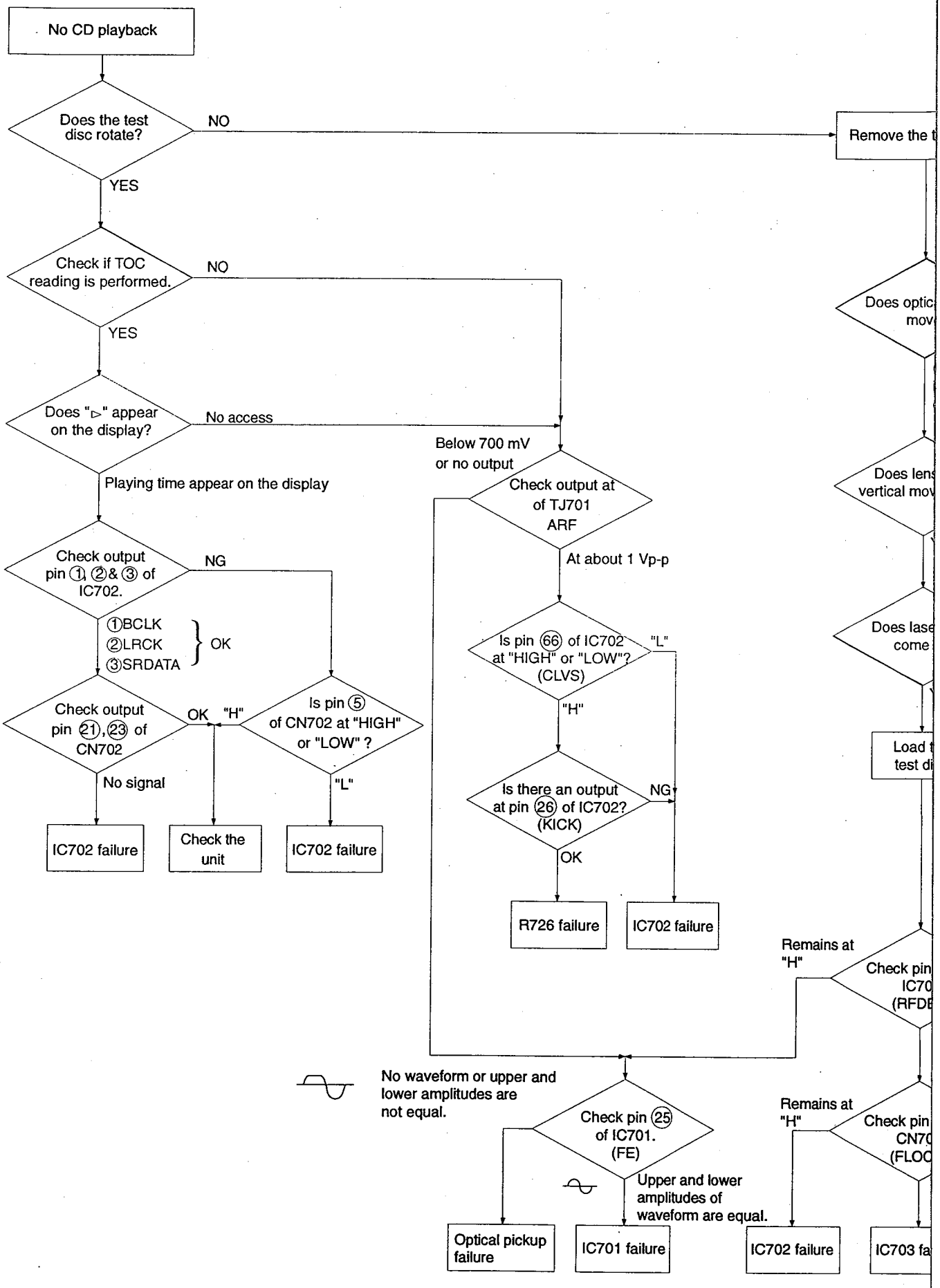
• IC702 (MN66271RA)

Pin No.	Mark	I/O	Function
1	BCLK	O	Serial bit clock terminal (Not used, open)
2	LRCK	O	L/R discriminating signal (Not used, open)
3	SRDATA	O	Serial data (Not used, open)
4	DVDD1	I	Power supply (digital circuit) terminal
5	DVSS1	—	GND (digital circuit) terminal
6	TX	O	Digital audio interface signal
7	MCLK	I	Microprocessor command clock signal
8	MDATA	I	Microprocessor command data signal
9	MLD	I	Microprocessor command load signal
10	SENSE	O	Sense signal output (OFT,FESL,MAGEND,NAJEND,POSAD,SFG)
11	/FLOCK	O	Optical servo condition(focus)("L" : lead-in)
12	/TLOCK	O	Optical servo condition(tracking)("L" : lead-in)
13	BLKCK	O	Sub-code block clock (f=75Hz)
14	SQCK	I	External clock signal input for sub-code Q register
15	SUBQ	O	Sub-code Q code output
16	DMUTE	I	Muting input ("H" : mute)
17	STAT	O	Status signal output (CRC,CUE,CLVS,TTSTVP,FCLV,SQCK)
18	/RST	I	Reset input
19	SMCK	O	1/2-divided clock signal of crystal oscillating at MSEL = "H" (fSMCK=8.4672MHz) 1/4-divided clock signal of crystal oscillating at MSEL="L" (fSMCK=4.2336MHz)
20	PMCK	O	1/192-divided clock signal of crystal oscillating (fPMCK=88.2kHz) (Not used, open)
21	TRV	O	Traverse servo control output
22	TVD	O	Traverse drive signal output
23	PC	O	Spindle motor ON signal output ("L" : ON)
24	ECM	O	Spindle motor drive signal output (forced mode output)
25	ECS	O	Spindle motor drive signal output (servo error signal output)
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive output
28	FOD	O	Focus drive output
29	VREF	I	D/A (drive) output (TVD,ECS,TRD,FOD, FBAL,TBAL) Reference voltage input.
30	FBAL	O	Focus balance adjustment output (Not used,open)

Pin No.	Mark	I/O	Function
31	TBAL	O	Tracking balance adjustment output
32	FE	I	Focus error signal input (analog input)
33	TE	I	Tracking error signal input (analog input)
34	RFENV	I	RF envelope signal input
35	VDET	I	Vibration detection signal input ("H" : detection)
36	OFT	I	Off-track signal input ("H" : off track)
37	TRCRS	I	Track cross signal input
38	/RFDET	I	RF detection signal input ("L" : detection)
39	BDO	I	Dropout signal input ("H" : Dropout)
40	LDON	O	Laser on signal output ("H" : ON)
41	TES	O	Tracking error shunt signal output ("H" : shunt)
42	PLAY	O	Play signal out ("H" : PLAY)
43	WVEL	O	Double speed status signal output ("H" : DS)
44	ARF	I	RF signal input
45	IREF	I	Reference current input
46	DRF	I	DSL bias (Not used, open)
47	DSLF	I/O	DSL loop filter
48	PLLF	I/O	PLL loop filter
49	VCOF	I/O	VCO loop filter (Not used, open)
50	AVDD2	I	Power supply input (for analog circuit)
51	AVSS2	—	GND (for analog circuit)
52	EFM	O	EFM signal output (Not used, open)
53	PCK	O	PLL extraction clock ouput (Not used, open) (fPCK=4.321 MHz during normal playback)
54	PDO	O	Phase comparison signal of EFM and PCK signals (Not used, open)
55	SUBC	O	Sub-code serial data output (Not used, open)
56	SBCK	I	Clock input for sub-code serial data (Not used, open)
57	VSS	—	GND
58	X1	I	Crystal oscillating circuit input (f=16.9344MHz)
59	X2	O	Crystal oscillating circuit output (f=16.9344MHz)
60	VDD	I	Power supply input (for oscillating circuit)
61	BYTCK	O	Byte clock output (Not used, open)
62	/CLDCK	O	Sub-code frame clock signal output (fCLDCK=7.35kHz during normal playback)


est disc
al pickup
e?
NO
Optical pickup moves toward
nner track once, and then toward
outer track slightly (2 or 3 mm).
s make
vements?
NO
YES
r diode
on?
NO
YES
he
sc
Measure voltage
across R701.
Below 0.4V
Above 0.4V
Optical pickup
failure
(18) of
1
T)
Changes from
"H" or "L"
(10) of
2
K)
Changes from
"H" or "L"
lure
Above 0.6V
Measure voltage
between (B) and (E)
of Q701.
Below 0.6V
Q701 or optical
pickup is
defective.
IC701 failure
Are there outputs
at pins (21) and (22) of
IC703?
NG
OK
Optical pickup
failure
Check the position
of optical pickup.
At outer or around middle track
At inner track
Is pin (1) of CN702
at "HIGH" or "LOW"?
"H"
"L"
Is pin (1) of CN702 at
"HIGH" or "LOW"?
"L" (0V)
Inner track limit
switch is defective
or disconnected
Inner track limit switch
is short-circuited.
NG
Is there an output
at pin (28) of IC702?
(FOD)
OK
IC702 failure
IC703 failure
NG
Are there outputs
pins (15) and (16) of
IC703?
OK
Traverse deck
failure
NG
Is there an output
at pin (21) of IC702?
(TRV)
OK
IC702 failure
IC703 failure

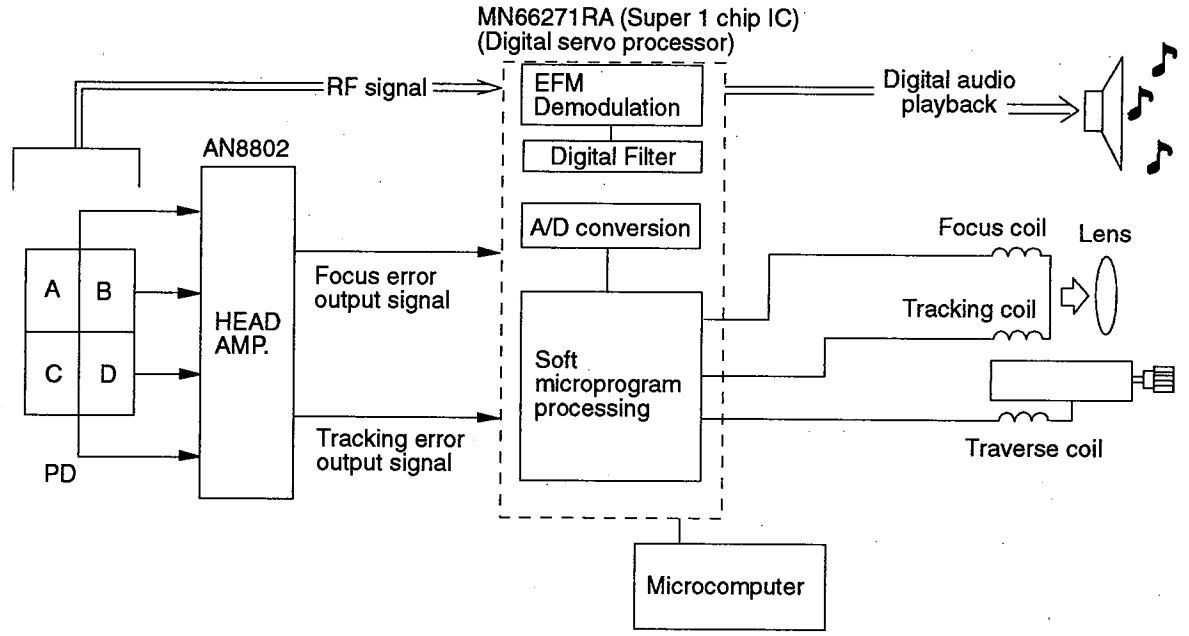
■ TROUBLESHOOTING GUIDE



■ DIGITAL SERVO SYSTEM

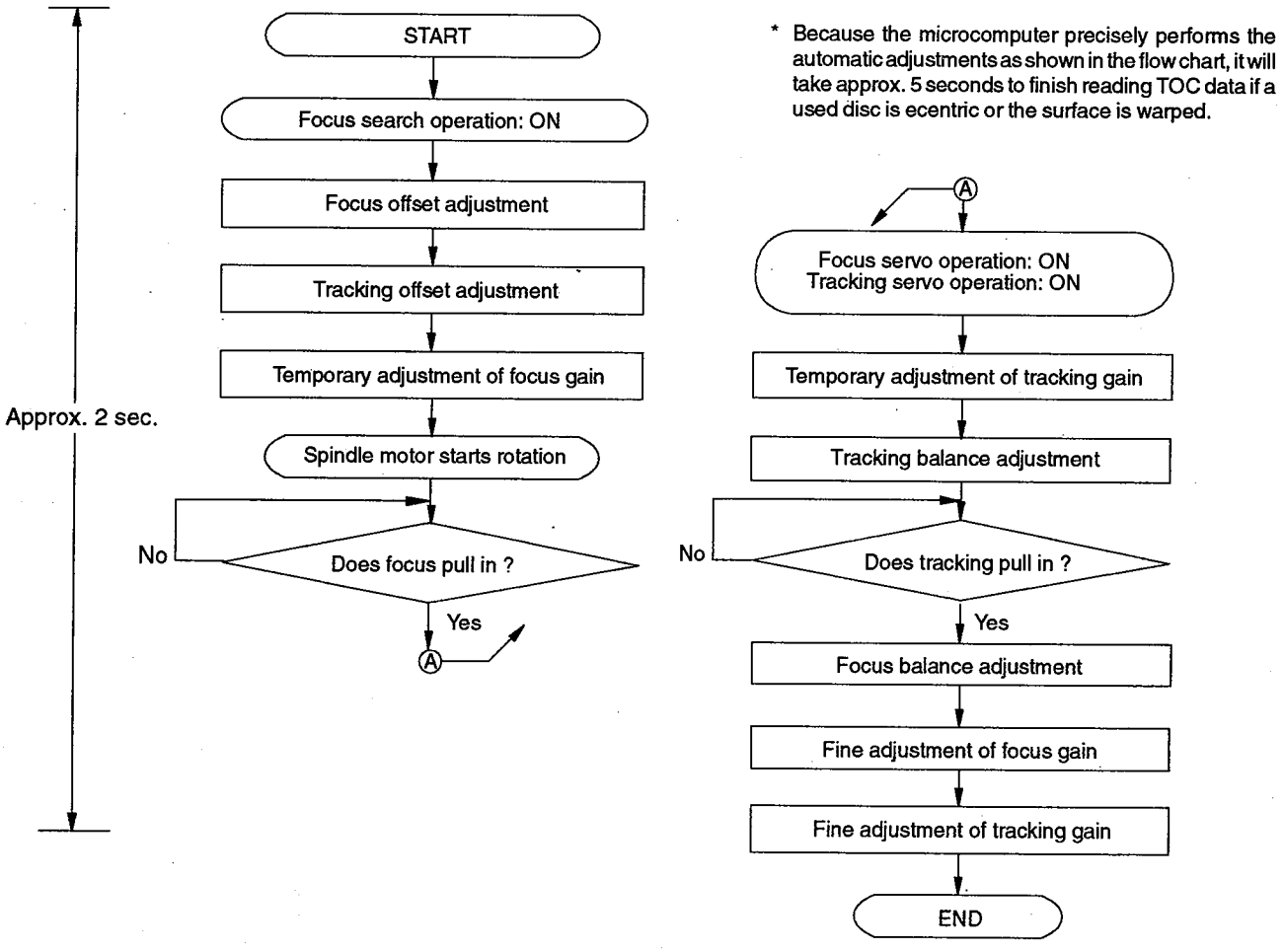
DIGITAL SERVO SYSTEM

This servo system has no adjustment VRs.



The following flow chart shows the sequence of automatic adjustments.

- **Flow chart on automatic adjustment sequence**



* Because the microcomputer precisely performs the automatic adjustments as shown in the flow chart, it will take approx. 5 seconds to finish reading TOC data if a used disc is ecentric or the surface is warped.

■ REPLACEMENT PARTS LIST

Notes:
* Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors) etc. are used.
When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.
* The parenthesized indications in the Ref. No. columns specify the areas. (refer to the cover page for area.)
Parts without these indications can be used for all areas.
* [M] Indicates in Remarks columns parts that are supplied by MESA.
* Warning: This product uses a laser diode. Refer to caution statements on page 2.

Ref. No	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUITS	
IC1	AN7273W	IC, AM/FM IF	
IC2	LM7001	IC, PLL	
IC3	RVIBA1332L	IC, MPX	
IC501	BA6218	IC, MOTOR DRIVER	
IC701	AN8802SCE1V	IC, HEAD AMP	
IC702	MN66271RA	IC, DIGITAL LSI	
IC703	AN8389SE1	IC, 4-CH DRIVER	
IC801	BA4558FDXE2	IC, OP AMP	[M]
IC802	BA4558FDXE2	IC, OP AMP	[M]
IC803	AN78M05	IC, REGULATOR	⚠
IC901	M38174M8246	IC, MICON	[M]
IC902	LA5608M-TE-L	IC, RESET	
IC1001	BA4558FDXE2	IC, OP AMP	[M]
		TRANSISTORS	
Q1	2SK544F-AC	TRANSISTOR	
Q2	2SC2786MTA	TRANSISTOR	
Q3	2SC2787FL1TA	TRANSISTOR	
Q4	2SC2787FL1TA	TRANSISTOR	
Q5	2SC2787LTA	TRANSISTOR	
Q6	2SC2787LTA	TRANSISTOR	
Q7	2SC1740SSTA	TRANSISTOR	
Q8	2SC1740SSTA	TRANSISTOR	
Q9	2SD1020HTA	TRANSISTOR	[M]
Q10	2SC1740SSTA	TRANSISTOR	
Q11	2SA933SSTA	TRANSISTOR	
Q12	2SA933SSTA	TRANSISTOR	
Q13	2SC1740SSTA	TRANSISTOR	
Q14	2SC1740SSTA	TRANSISTOR	
Q17	2SC1740SSTA	TRANSISTOR	
Q501	RVTDTC143EST	TRANSISTOR	
Q701	2SB709S	TRANSISTOR	
Q801	2SD2037ETA	TRANSISTOR	[M]⚠
Q802	2SA933SSTA	TRANSISTOR	
Q803	2SB621ARTA	TRANSISTOR	⚠
Q804	2SC2001KTA	TRANSISTOR	

Ref. No	Part No.	Part Name & Description	Remarks
Q805	2SD1273P	TRANSISTOR	
Q806	2SB1185E	TRANSISTOR	
Q807	RVTDTC124EST	TRANSISTOR	[M]
Q808	2SD1020HTA	TRANSISTOR	[M]
Q809	2SD1020HTA	TRANSISTOR	[M]
Q810	2SC2001KTA	TRANSISTOR	
Q811	RVTDTC124EST	TRANSISTOR	[M]
Q812	2SB621ARTA	TRANSISTOR	
Q813	2SA933SSTA	TRANSISTOR	
Q814	2SA933SSTA	TRANSISTOR	
Q901	2SC1740SSTA	TRANSISTOR	
Q903	2SC1740SSTA	TRANSISTOR	
Q904	2SC1740SSTA	TRANSISTOR	
Q905	2SC1740SSTA	TRANSISTOR	
Q1001	2SD1020HTA	TRANSISTOR	[M]
DIODES			
D1	SVC211SPA-AL	DIODE	
D2	SVC211SPA-AL	DIODE	
D3	SVC211SPA-AL	DIODE	
D4	RVDMTZ5R6CTA	DIODE	[M]
D5	RVD1SS133TA	DIODE	
D6	RVD1SS133TA	DIODE	
D501	MA165TA	DIODE	
D502	RSQGP1S53V	PHOTO INTERRUPTOR	
D503	PT381TB	PHOTO TRANSISTOR	
D504	GL380TB	LED	
D801	1D3E	DIODE	[M]⚠
D802	1D3E	DIODE	[M]⚠
D804	1D3E	DIODE	[M]⚠
D805	1D3E	DIODE	[M]⚠
D806	RVDMTZ15CTA	DIODE	[M]
D807	RVDMTZ11BTA	DIODE	
D808	1D3E	DIODE	[M]⚠
D809	1D3E	DIODE	[M]⚠
D810	MA4270MTA	DIODE	⚠
D811	1D3E	DIODE	[M]⚠
D812	1D3E	DIODE	[M]⚠
D814	RVDMTZ5R6CTA	DIODE	[M]

Ref. No	Part No.	Part Name & Description	Remarks
D815	RVDMTZ8R2CTA	DIODE	[M]
D816	RVD1SS133TA	DIODE	
D817	RVD1SS133TA	DIODE	
D818	RVDMTZ6R8ATA	DIODE	[M]
D819	RVD1SS133TA	DIODE	
D820	RVD1SS133TA	DIODE	
D821	RVD1SS133TA	DIODE	
D823	RVDMTZ10BTA	DIODE	
D826	RVDMTZ5R1BTA	DIODE	
D827	RVD1SS133TA	DIODE	
D828	RVD1SS133TA	DIODE	
D829	RVD1SS133TA	DIODE	
D900	RVD1SS133TA	DIODE	
D901	RVD1SS133TA	DIODE	
D902	RVD1SS133TA	DIODE	
D903	RVD1SS133TA	DIODE	
D904	RVD1SS133TA	DIODE	
D905	RVD1SS133TA	DIODE	
D906	RVD1SS133TA	DIODE	
D907	1SS291TA	DIODE	
D908	RVD1SS133TA	DIODE	
D910	RVD1SS133TA	DIODE	
D911	RVD1SS133TA	DIODE	
D912	RVD1SS133TA	DIODE	
D913	RVD1SS133TA	DIODE	
D914	RVD1SS133TA	DIODE	
D917	1SS291TA	DIODE	
D934	RVDMTZ4R7BTA	DIODE	
D1001	RVD1SS133TA	DIODE	
		VARIABLE RESISTORS	
VR1	EVNDXAA00B14	VR, FM STEREO	
VR901	RRV16B24204A	VR, TUNING/CD SKIP	[M]
VR1001	RRV12A01B53A	VR, MIC VOLUME	[M]
		SWITCHES	
S501	RSH2A001-2	SW, UP/DOWN	
S502	RSH1A005	SW, FULL OPEN	
S503	RSH1A005	SW, HALF OPEN	
S701	RSM0006-P	SW, RESET	
S901	EVQ21405R	SW, SET	
S902	EVQ21405R	SW, TUNING MODE	
S903	EVQ21405R	SW, FM MODE / BP	
S904	EVQ21405R	SW, TUNER / BAND	
S905	EVQ21405R	SW, CD	
S906	EVQ21405R	SW, AUX	

Ref. No	Part No.	Part Name & Description	Remarks
S907	EVQ21405R	SW, TAPE	
S908	EVQ21405R	SW, CD DISPLAY	
S909	EVQ21405R	SW, KARAOKE	
S910	EVQ21405R	SW, DISC OPEN / CLOSE	
S911	EVQ21405R	SW, FORWARD SKIP	
S912	EVQ21405R	SW, REVERSE SKIP	
S913	EVQ21405R	SW, RANDOM	
S914	EVQ21405R	SW, REPEAT	
S915	EVQ21405R	SW, DISC 1	
S916	EVQ21405R	SW, DISC 2	
S917	EVQ21405R	SW, DISC 3	
S918	EVQ21405R	SW, LAST FADE	
S919	EVQ21405R	SW, ALBUM	
S920	EVQ21405R	SW, J. FIT	
S921	EVQ21405R	SW, PLAY	
S922	EVQ21405R	SW, PAUSE	
S923	EVQ21405R	SW, STOP	
		COILS & TRANSFORMERS	
L2	RLQZP1R2JT-Y	AXIAL COIL	[M]
L4	RLQZP1R2JT-Y	AXIAL COIL	[M]
L7	RLQZP1R8KT-Y	AXIAL COIL	
L50	RLQZP1R2JT-Y	AXIAL COIL	[M]
L51	RLQZPR47KT-Y	AXIAL COIL	
L803	RLQZP3R3KT-Y	AXIAL COIL	
L804	RLQZP3R3KT-Y	AXIAL COIL	
L901	RLQZP3R3KT-Y	AXIAL COIL	
L902	RLQZP2R2KT-Y	AXIAL COIL	
L903	RLQZP2R2KT-Y	AXIAL COIL	
T1	RLI4B017-Z	FM IFT	[M]
T801	RTP1J4G003	POWER TRANSFORMER	[M]⚠
		COMPONENT COMBINATION	
Z1	RLA2Z001M-T	AM COIL BLOCK	
Z2	RLI2Z003-T	AM IFT	[M]
Z801	BL02RN2R65T2	BEAD CORE	
Z802	BL02RN2R65T2	BEAD CORE	
		CERAMIC FILTERS	
CF1	RLFFETWNA01L	FM CF	
CF2	RLFFETWNA01L	FM CF	

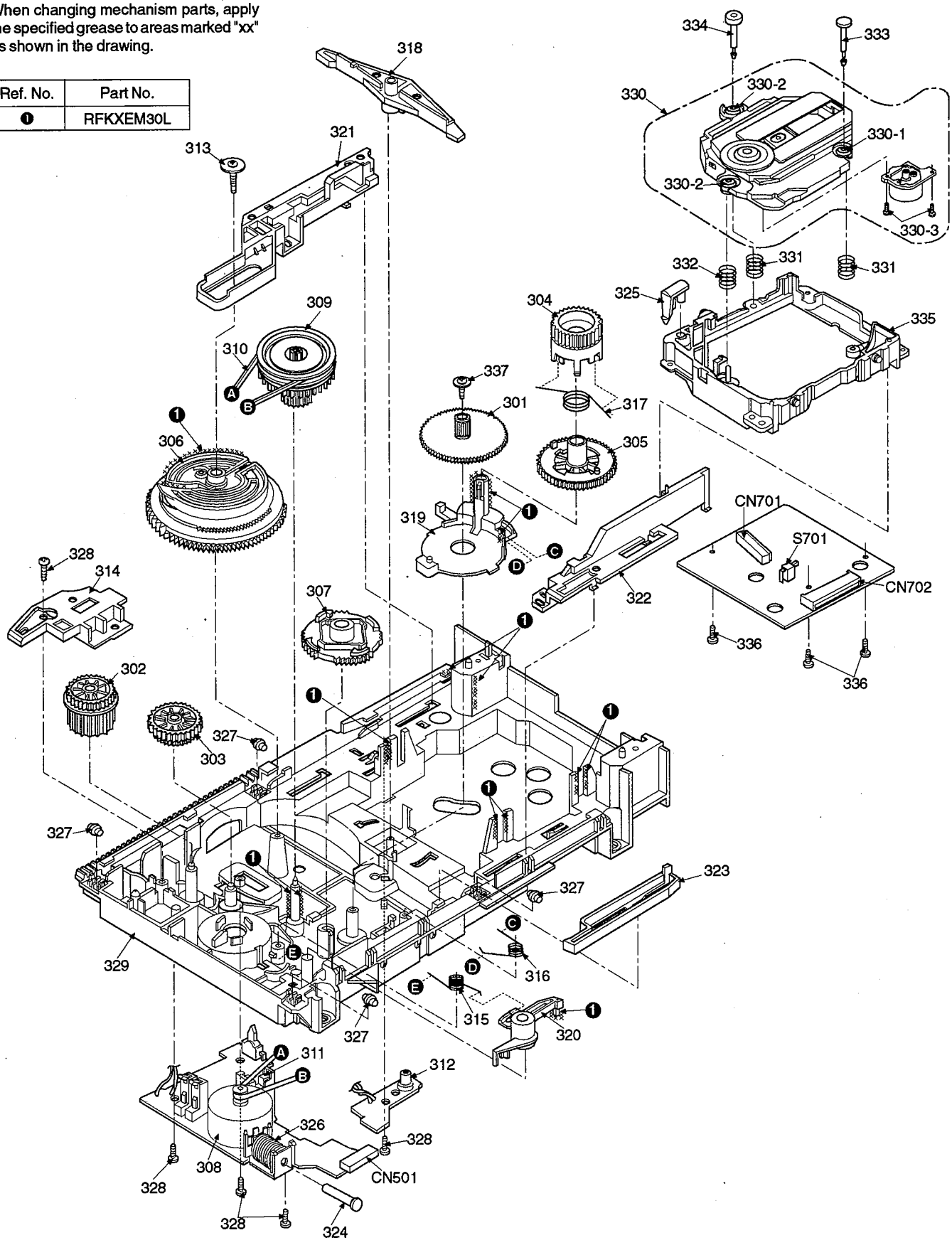
Ref. No	Part No.	Part Name & Description	Remarks
		OSCILLATORS	
X1	SVQ49U722T-S	7.2MHZ X'TAL	
X701	RSXZ16M9M02T	CERAMIC OSC	
X901	RSXZ4M19M01T	4.19 MHZ X'TAL	
X902	RSXD32K7S02	32.768 KHZ X'TAL	[M]
		DISPLAY TUBE	
FL901	RSL0165-F	FL	[M]
		CONNECTORS	
CN501	RJS1A6714-Q	14 PIN CONNECTOR	[M]
CN701	RJU035T016-1	16 PIN FFC CONNECTOR	
CN702	RJS1A6723-1Q	23 PIN FFC CONNCETOR	
CN800	RJS1A5212	12P CONNECTOR	
CN802	RJT065K15	AB CONNECTOR	
CN803	RJS1A6814	14P FFC CONNECTOR	
CN804	RJS1A5205	5P CONNECTOR	[M]
CN900A	RJS1A6223-1	23P FFC CONNECTOR	
CN900B	RJS1A6823	23P FFC CONNECTOR	
CN902A	RJS1A6223-1	23P FFC CONNECTOR	
CP1	RJP5G9YA	5P	
CP2	RJP9G9YA	9P	
		JACKS	
JK1	RJH5302	ANTENNA TERMINAL	[M]
JK2	SJS208	LOOP ANT TERMINAL	
JK1001	RJJ37TK01-C	MIC JACK	[M]
		WIRES	
W1	REX0586	5P WIRE	[M]
W2	REX0587	9P WIRE	[M]
		PACKING MATERIALS	
P1	RPN0763	POLYFOAM	[M]
P2	RPF0100	BAG (SET)	[M]

Ref. No	Part No.	Part Name & Description	Remarks
		LOADING PARTS	
301	RDG0194	GEAR	
302	RDG0223	GEAR	
303	RDG0224	GEAR	
304	RDG0244	GEAR	
305	RDG0245	GEAR	
306	RDK0022	GEAR	
307	RDK0023	GEAR	
308	RFKPLCH555PK	MOTOR ASS'Y	
309	RDP0058	GEAR	
310	RDV0025	BELT	
311	RMN0204	SENSOR HOLDER	
312	RMN0222	LED HOLDER	
313	RHD30046	SCREW	
314	RMA0653	ANGLE	
315	RME0120	SPRING	
316	RME0121	SPRING	
317	RME0137	SPRING	
318	RML0177	LEVER	
319	RML0288	LEVER	
320	RML0289	LEVER	
321	RMM0097	SLIDE PLATE(1)	
322	RMM0098	SLIDE PLATE(2)	
323	RMM0099	SLIDE PLATE(3)	
324	RMS0398	PLUNGER	
325	RMX0072	LEVER	
326	RSJ0003	SOLENOID(PL501)	
327	RMR0701-K	ROLLER	
328	XTB3+10JFZ	SCREW	
329	RFKJLCH555PB	MECH CHASSIS ASS'Y	
330	RAE0113Z	TRAVERSE UNIT	
330-1	SHGD112	FLOATING RUBBER(A)	
330-2	SHGD113-1	FLOATING RUBBER(B)	
330-3	XQS2+A35FZ	SCREW	
331	RME0109	FLOATING SPRING A	
332	RME0142	FLOATING SPRING B	
333	RMS0123-1	FIXED PIN A	
334	RMS0350	FIXED PIN B	
335	RMR0698-K	TRAVERSE CHASSIS	
336	XTV2+6G	SCREW	
337	RHD26014	SCREW	

LOADING UNIT PARTS LOCATION

Note:
When changing mechanism parts, apply the specified grease to areas marked "xx" as shown in the drawing.

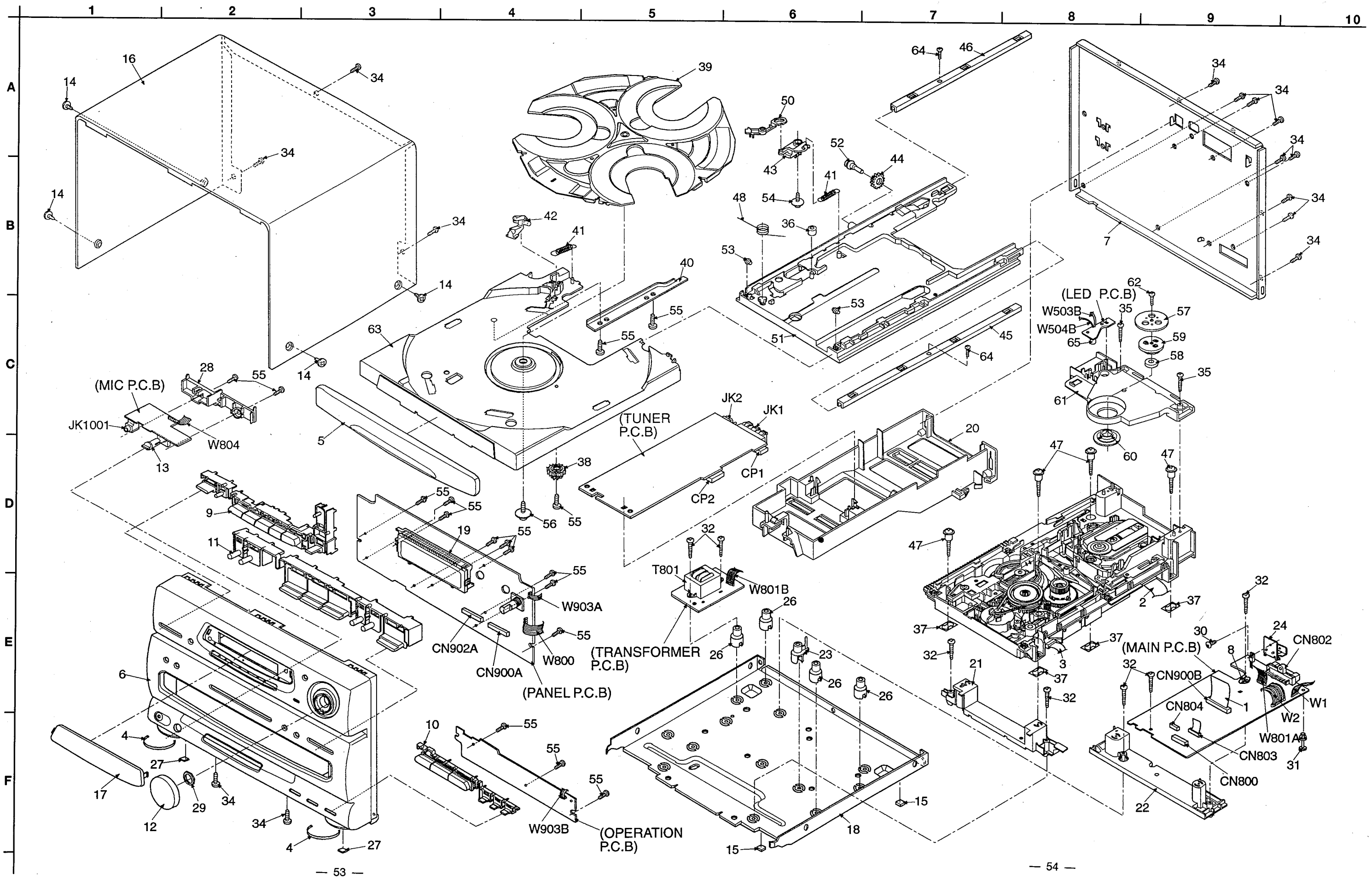
Ref. No.	Part No.
❶	RFKXEM30L



Ref. No	Part No.	Part Name & Description	Remarks
		CABINET AND CHASSIS	
1	REE0549	FFC (PANEL-MAIN)	[M]
2	REE0550	FFC (PANEL-CD)	[M]
3	REE0551	FFC (CD-MAIN)	[M]
4	RGK0608-N	FOOT ORNAMENT	[M]
5	RGK0610-K	CHANGER LID	[M]
6	RGP0375-K	FRONT PANEL	[M]
6	RGP0375D-K	FRONT PANEL	[M]
7	RGR0183B-A	REAR PANEL	[M]
7	RGR0183B-H	REAR PANEL	[M]
8	SNE1004-1	EARTH TERMINAL	
9	RGU1009-K	INPUT SELECTOR BUTTON	[M]
10	RGU1012-K	CD OPERATION BUTTON	[M]
11	RGU1013-K	DISK SELECTOR BUTTON	[M]
12	RGW0194-K	A1 JOG KNOB	[M]
13	RGW0195-K	MIC KNOB	[M]
14	RHD30007	SCREW	
15	RKA0059-K	LEG RUBBER	[M]
16	RKM0248Z-K	CABINET	[M]
17	RKW0323A-Q	FL WINDOW	[M]
18	RMK0236	BOTTOM CHASSIS	[M]
19	RMN0253	FL HOLDER	[M]
20	RMR0738-X	TU PCB SUPPORT	[M]
21	RMR0734-X	CHANGER SUPPORT (F)	[M]
22	RMR0735-X	CHANGER SUPPORT (R)	[M]
23	RMR0741-X	PCB SUPPORT (PIN)	[M]
24	RMY0132	HEAT SINK	[M]
26	SHE187-3	PCB SUPPORT	
27	SHS3276	LEG FELT	[M]
28	RMR0739-X	MIC JACK HOLDER	[M]
29	XNS9D	NUT	
30	XTB3+12CFN	SCREW	
31	RMR0406	MAIN PCB SUPPORT	[M]
32	XTB3+20J	SCREW	
33	XTBS26+10J	SCREW	
34	XTBS3+8JFZ1	SCREW	
35	XTB3+16JFZ	CLAMPER ASS'Y SCREW	
36	RMG0293-C	CUSHION	
37	RMG0319-K	RUBBER CUSHION	
38	RDG0228	GEAR	
39	RGT0014	ROTARY TRAY	[M]
40	RMA0681	ANGLE	
41	RME0123	SPRING	
42	RML0312	LEVER	
43	RDG0225	GEAR	
44	RDG0227	GEAR	

Ref. No	Part No.	Part Name & Description	Remarks
45	RMA0654	ANGLE(A)	
46	RMA0655	ANGLE(B)	
47	RHD30048	SCREW	[M]
48	RME0139	SPRING	
50	RML0291	LEVER	
51	RMR0627-K	TRAY BASE	
52	RMS0382	SHAFT	
53	SDRD14	ROLLER	
54	XTW3+6S	SCREW	
55	XTBS26+10J	SCREW	
56	XTWS3+10T	SCREW	
57	RDF0033	MAGNET HOLDER(A)	
58	RHM245ZA	MAGNET	
59	RMR0334	MAGNET HOLDER(B)	
60	RMR0624-W	DISC HOLDER	
61	RMR0625-W	DISC CLAMPER	
62	XTB3+6JFZ	SCREW	
63	RFKNLCH555PK	DISC TRAY ASS'Y	
64	XTN2+6F	SCREW	
65	RMN0222	LED HOLDER	

■ CABINET PARTS LOCATION



■ RESISTORS & CAPACITORS

Notes : * Capacitor values are in microfarad (μF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
* Resistors values are in ohms, unless specified otherwise, 1k=1,000(OHM), 1M=1,000k(OHM)

Ref. No.	Part No.	Values & Remarks
	RESISTORS	
R1	ERDS2TJ104T	100K 1/4W
R2	ERDS2TJ104T	100K 1/4W
R3	ERDS2TJ470T	47 1/4W
R4	ERDS2TJ104T	100K 1/4W
R5	ERDS2TJ564T	560K 1/4W
R6	ERDS2TJ391T	390 1/4W
R7	ERDS2TJ561T	560 1/4W
R8	ERDS2TJ474T	470K 1/4W
R9	ERDS2TJ272T	2.7K 1/4W
R10	ERDS2TJ102T	1K 1/4W
R11	ERDS2TJ224T	220K 1/4W
R12	ERDS2TJ273T	27K 1/4W
R13	ERDS2TJ122T	1.2K 1/4W
R14	ERDS2TJ152T	1.5K 1/4W
R15	ERDS2TJ684T	680K 1/4W
R16	ERDS2TJ824T	820K 1/4W
R17	ERDS2TJ391T	390 1/4W
R18	ERDS2TJ121T	120 1/4W
R19	ERDS2TJ103T	10K 1/4W
R20	ERDS2TJ152T	1.5K 1/4W
R21	ERDS2TJ102T	1K 1/4W
R22	ERDS2TJ561T	560 1/4W
R24	ERDS2TJ153T	15K 1/4W
R25	ERDS2TJ331T	330 1/4W
R26	ERDS2TJ391T	390 1/4W
R27	ERDS2TJ104T	100K 1/4W
R28	ERDS2TJ684T	680K 1/4W
R29	ERDS2TJ102T	1K 1/4W
R30	ERDS2TJ103T	10K 1/4W
R31	ERDS2TJ104T	100K 1/4W
R32	ERDS2TJ102T	1K 1/4W
R33	ERDS2TJ562T	5.6K 1/4W
R34	ERDS2TJ102T	1K 1/4W
R35	ERDS2TJ153T	15K 1/4W
R46	ERDS2TJ103T	10K 1/4W
R47	ERDS2TJ473T	47K 1/4W
R48	ERDS2TJ104T	100K 1/4W
R50	ERDS2TJ562T	5.6K 1/4W
R51	ERDS2TJ153T	15K 1/4W
R52	ERDS2TJ561T	560 1/4W
R53	ERDS2TJ102T	1K 1/4W

Ref. No.	Part No.	Values & Remarks
R58	ERDS2TJ151T	150 1/4W
R61	ERDS2TJ103T	10K 1/4W
R64	ERDS2TJ103T	10K 1/4W
R65	ERDS2TJ103T	10K 1/4W
R66	ERDS2TJ102T	1K 1/4W
R67	ERDS2TJ102T	1K 1/4W
R68	ERDS2TJ224T	220K 1/4W
R69	ERDS2TJ681T	680 1/4W
R71	ERDS2TJ681T	680 1/4W
R72	ERDS2TJ683T	68K 1/4W
R73	ERDS2TJ102T	1K 1/4W
R74	ERDS2TJ562T	5.6K 1/4W
R75	ERDS2TJ562T	5.6K 1/4W
R76	ERDS2TJ562T	5.6K 1/4W
R77	ERDS2TJ104T	100K 1/4W
R78	ERDS2TJ822T	8.2K 1/4W
R80	ERDS2TJ824T	820K 1/4W
R81	ERDS2TJ181T	180 1/4W
R82	ERDS2TJ562T	5.6K 1/4W
R83	ERDS2TJ122T	1.2K 1/4W
R84	ERDS2TJ102T	1K 1/4W
R85	ERDS2TJ103T	10K 1/4W
R86	ERDS2TJ104T	100K 1/4W
R87	ERDS2TJ104T	100K 1/4W
R88	ERDS2TJ104T	100K 1/4W
R89	ERDS2TJ562T	5.6K 1/4W
R501	ERDS2TJ271	270 1/4W
R701	ERJ6GEYJ100V	10 1/10W
R702	ERJ6GEYJ471V	470 1/10W
R703	ERJ6GEYJ823V	82K 1/10W
R704	ERJ6GEYJ102V	1K 1/10W
R705	ERJ6GEYJ103V	10K 1/10W
R706	ERJ6GEYJ102V	1K 1/10W
R707	ERJ6GEYJ473V	47K 1/10W
R708	ERJ6GEYJ104V	100K 1/10W
R709	ERJ6GEYJ683V	68K 1/10W
R711	ERJ6GEYJ154V	150K 1/10W
R712	ERJ6GEYJ221V	220 1/10W
R717	ERJ6GEYJ102V	1K 1/10W
R718	ERJ6GEYJ102V	1K 1/10W
R719	ERJ6GEYJ102V	1K 1/10W
R720	ERJ6GEYJ102V	1K 1/10W
R721	ERJ6GEYJ101V	100 1/10W
R722	ERJ6GEYJ563V	56K 1/10W

Ref. No.	Part No.	Values & Remarks
R723	ERJ6GEYJ182V	1.8K 1/10W
R724	ERJ6GEYJ333V	33K 1/10W
R725	ERJ6GEYJ472V	4.7K 1/10W
R726	ERJ6GEYJ473V	47K 1/10W
R727	ERJ6GEYJ103V	10K 1/10W
R728	ERJ6GEYJ392V	3.9K 1/10W
R730	ERJ6GEYJ331V	330 1/10W
R731	ERJ6GEYJ392V	3.9K 1/10W
R734	ERJ6GEYJ101V	100 1/10W
R735	ERJ6GEYJ101V	100 1/10W
R736	ERJ6GEYJ101V	100 1/10W
R738	ERJ6GEYJ223V	22K 1/10W
R739	ERJ6GEYJ681V	680 1/10W
R741	ERJ6GEYJ562V	5.6K 1/10W
R742	ERJ6GEYJ562V	5.6K 1/10W
R743	ERJ6GEYJ562V	5.6K 1/10W
R744	ERJ6GEYJ103V	10K 1/10W
R745	ERJ6GEYJ155V	1.5M 1/10W
R748	ERJ6GEYJ182V	1.8K 1/10W
R749	ERJ8GEYJ103V	10K 1/8W
R801	ERDS2TJ104T	100K 1/4W
R802	ERDS2TJ104T	100K 1/4W
R803	ERDS2TJ103T	10K 1/4W
R804	ERDS2TJ103T	10K 1/4W
R805	ERDS2TJ223T	22K 1/4W
R806	ERDS2TJ330T	33 1/4W
R807	ERDS2TJ330T	33 1/4W
R808	ERDS2TJ330T	33 1/4W
R809	ERDS2TJ333T	33K 1/4W
R810	ERDS2TJ333T	33K 1/4W
R811	ERDS2TJ471T	470 1/4W
R812	ERDS2TJ101T	100 1/4W
R813	ERDS2TJ122T	1.2K 1/4W
R814	ERDS2TJ102T	1K 1/4W
R816	ERDS2TJ470T	47 1/4W
R817	ERDS2TJ101T	100 1/4W
R818	ERDS2TJ152T	1.5K 1/4W
R819	ERDS2TJ122T	1.2K 1/4W
R820	ERDS1FVJ181T	180 1/2W⚠
R821	ERDS2TJ101T	100 1/4W
R822	ERDS1FVJ391T	390 1/2W⚠
R824	ERDS2TJ331T	330 1/4W
R825	ERDS2TJ103T	10K 1/4W
R826	ERDS2TJ103T	10K 1/4W

Ref. No.	Part No.	Values & Remarks
R827	ERDS2TJ103T	10K 1/4W
R828	ERDS2TJ101T	100 1/4W
R829	ERDS2TJ122T	1.2K 1/4W
R830	ERDS2TJ330T	33 1/4W
R831	ERDS2TJ332T	3.3K 1/4W
R832	ERDS2TJ222T	2.2K 1/4W
R833	ERDS2TJ271T	270 1/4W
R834	ERD25FVJ6R8T	6.8 1/4W
R835	ERDS2TJ821T	820 1/4W
R836	ERDS2TJ104T	100K 1/4W
R837	ERDS2TJ104T	100K 1/4W
R838	ERDS2TJ223T	22K 1/4W
R839	ERDS2TJ223T	22K 1/4W
R840	ERDS2TJ223T	22K 1/4W
R841	ERDS2TJ223T	22K 1/4W
R842	ERDS2TJ273T	27K 1/4W
R843	ERDS2TJ273T	27K 1/4W
R844	ERDS2TJ332T	3.3K 1/4W
R845	ERDS2TJ332T	3.3K 1/4W
R846	ERDS2TJ222T	2.2K 1/4W
R847	ERDS2TJ103T	10K 1/4W
R849	ERDS2TJ222T	2.2K 1/4W
R850	ERDS2TJ103T	10K 1/4W
R851	ERDS2TJ153T	15K 1/4W
R852	ERDS2TJ330T	33 1/4W
R853	ERDS2TJ470T	47 1/4W
R854	ERDS2TJ470T	47 1/4W
R855	ERDS2TJ102T	1K 1/4W
R856	ERDS2TJ102T	1K 1/4W
R857	ERDS2TJ223T	22K 1/4W
R858	ERDS2TJ103T	10K 1/4W
R859	ERDS2TJ222T	2.2K 1/4W
R860	ERDS2TJ222T	2.2K 1/4W
R870	ERDS2TJ330T	33 1/4W
R901	ERDS2TJ153T	15K 1/4W
R902	ERDS2TJ153T	15K 1/4W
R903	ERDS2TJ153T	15K 1/4W
R904	ERDS2TJ152T	1.5K 1/4W
R905	ERDS2TJ222T	2.2K 1/4W
R906	ERDS2TJ272T	2.7K 1/4W
R907	ERDS2TJ392T	3.9K 1/4W
R908	ERDS2TJ562T	5.6K 1/4W
R909	ERDS2TJ822T	8.2K 1/4W
R910	ERDS2TJ153T	15K 1/4W
R911	ERDS2TJ333T	33K 1/4W
R912	ERDS2TJ152T	1.5K 1/4W
R913	ERDS2TJ222T	2.2K 1/4W
R914	ERDS2TJ272T	2.7K 1/4W

Ref. No.	Part No.	Values & Remarks
R915	ERDS2TJ392T	3.9K 1/4W
R916	ERDS2TJ562T	5.6K 1/4W
R917	ERDS2TJ822T	8.2K 1/4W
R918	ERDS2TJ153T	15K 1/4W
R919	ERDS2TJ152T	1.5K 1/4W
R920	ERDS2TJ222T	2.2K 1/4W
R921	ERDS2TJ272T	2.7K 1/4W
R922	ERDS2TJ392T	3.9K 1/4W
R923	ERDS2TJ562T	5.6K 1/4W
R924	ERDS2TJ101T	100 1/4W
R925	ERDS2TJ101T	100 1/4W
R926	ERDS2TJ222T	2.2K 1/4W
R927	ERDS2TJ222T	2.2K 1/4W
R928	ERDS2TJ222T	2.2K 1/4W
R929	ERDS2TJ103T	10K 1/4W
R931	ERDS2TJ103T	10K 1/4W
R932	ERDS2TJ102T	1K 1/4W
R933	ERDS2TJ104T	100K 1/4W
R934	ERDS2TJ820T	82 1/4W
R935	ERDS2TJ104T	100K 1/4W
R936	ERDS2TJ331T	330 1/4W
R937	ERDS2TJ103T	10K 1/4W
R938	ERDS2TJ104T	100K 1/4W
R939	ERDS2TJ473T	47K 1/4W
R940	ERDS2TJ473T	47K 1/4W
R943	ERDS2TJ101T	100 1/4W
R944	ERDS2TJ101T	100 1/4W
R945	ERDS2TJ683T	68K 1/4W
R948	ERDS2TJ472T	4.7K 1/4W
R949	ERDS2TJ472T	4.7K 1/4W
R950	ERDS2TJ681T	680 1/4W
R951	ERDS2TJ334T	330K 1/4W
R952	ERDS2TJ103T	10K 1/4W
R953	ERDS2TJ102T	1K 1/4W
R954	ERDS2TJ223T	22K 1/4W
R956	ERDS2TJ223T	22K 1/4W
R957	ERDS2TJ223T	22K 1/4W
R958	ERDS2TJ223T	22K 1/4W
R959	ERDS2TJ102T	1K 1/4W
R960	ERDS2TJ102T	1K 1/4W
R961	ERDS2TJ102T	1K 1/4W
R962	ERDS2TJ102T	1K 1/4W
R963	ERDS2TJ102T	1K 1/4W
R964	ERDS2TJ102T	1K 1/4W
R965	ERDS2TJ102T	1K 1/4W
R966	ERDS2TJ101T	100 1/4W
R967	ERDS2TJ102T	1K 1/4W
R968	ERDS2TJ223T	22K 1/4W

Ref. No.	Part No.	Values & Remarks
R969	ERDS2TJ223T	22K 1/4W
R970	ERDS2TJ103T	10K 1/4W
R971	ERDS2TJ222T	2.2K 1/4W
R972	ERDS2TJ103T	10K 1/4W
R973	ERDS2TJ103T	10K 1/4W
R974	ERDS2TJ104T	100K 1/4W
R975	ERDS2TJ104T	100K 1/4W
R976	ERDS2TJ104T	100K 1/4W
R977	ERDS2TJ104T	100K 1/4W
R978	ERDS2TJ104T	100K 1/4W
R979	ERDS2TJ104T	100K 1/4W
R980	ERDS2TJ104T	100K 1/4W
R981	ERDS2TJ104T	100K 1/4W
R983	ERDS2TJ106T	10M 1/4W
R1001	ERDS2TJ103T	10K 1/4W
R1002	ERDS2TJ472T	4.7K 1/4W
R1005	ERDS2TJ224T	220K 1/4W
R1006	ERDS2TJ103T	10K 1/4W
R1011	ERDS2TJ392T	3.9K 1/4W
R1012	ERDS2TJ153T	15K 1/4W
R1013	ERDS2TJ104T	100K 1/4W
R1014	ERDS2TJ561T	560 1/4W
R1015	ERDS2TJ223T	22K 1/4W
R1016	ERDS2TJ223T	22K 1/4W
R1017	ERDS2TJ223T	22K 1/4W
R1018	ERDS2TJ101T	100 1/4W
	CHIP JUMPERS	
RJ701	ERJ8GEY0R00A	0 1/10W
RJ702	ERJ8GEY0R00A	0 1/10W
RJ703	ERJ8GEY0R00A	0 1/10W
RJ704	ERJ8GEY0R00A	0 1/10W
RJ707	ERJ8GEY0R00A	0 1/10W
RJ708	ERJ8GEY0R00A	0 1/10W
RJ709	ERJ8GEY0R00A	0 1/10W
RJ714	ERJ8GEY0R00A	0 1/10W
RJ715	ERJ8GEY0R00A	0 1/10W
RJ716	ERJ8GEY0R00A	0 1/10W
RJ717	ERJ8GEY0R00A	0 1/10W
RJ721	ERJ6GEY0R00A	0 1/10W
RJ724	ERJ6GEY0R00A	0 1/10W
RJ725	ERJ6GEY0R00A	0 1/10W
RJ726	ERJ6GEY0R00A	0 1/10W
RJ799	ERJ6GEY0R00A	0 1/10W

Ref. No.	Part No.	Values & Remarks
	TEST JUMPERS	
TJ701	EYF8CU	TEST JUMPER
TJ702	EYF8CU	TEST JUMPER
	CAPACITORS	
C1	ECBT1H6R8KC5	6.8P 50V
C2	ECBT1H102KB5	1000P 50V
C3	ECBT1H102KB5	1000P 50V
C4	ECBT1H3R3KC5	3.3P 50V
C5	ECBT1H102KB5	1000P 50V
C6	ECBT1H2R7KC5	2.7P 50V
C7	ECBT1H120JC5	12P 50V
C8	ECBT1H181KB5	180P 50V
C9	ECBT1H3R3KC5	3.3P 50V
C10	ECBT1H102KB5	1000P 50V
C11	ECBT1H102KB5	1000P 50V
C12	ECBT1H6R8KC5	6.8P 50V
C13	ECBT1H5R6KC5	5.6P 50V
C14	ECBT1H180JC5	18P 50V
C15	ECBT1H102KB5	1000P 50V
C16	ECBT1H102KB5	1000P 50V
C17	ECBT1C103NS5	0.01 16V
C18	ECBT1H101KB5	100P 50V
C19	ECBT0J223NS5	0.022 6.3V
C20	ECEA1CU100B	10 16V
C21	ECBT1H150JC5	15P 50V
C22	ECBT0J223NS5	0.022 6.3V
C23	ECBT0J223NS5	0.022 6.3V
• C24	ECBT1C103NS5	0.01 16V
C25	ECEA1CU100B	10 16V
C26	ECEA0JU101B	100 6.3V
C27	ECBT0J223NS5	0.022 6.3V
C28	ECBT1C103NS5	0.01 16V
C29	ECEA1HUR47B	0.47 50V
C30	ECEA1HU010B	1 50V
C31	ECBT1H101KB5	100P 50V
C32	ECEA1CU100B	10 16V
C33	ECBT1C103NS5	0.01 16V
C34	ECBT1C103NS5	0.01 16V
C35	ECBT1H150JC5	15P 50V
C36	ECBT1C103NS5	0.01 16V
C37	ECBT1C103NS5	0.01 16V
C38	ECKR1H103ZF5	0.01 50V
C39	ECBT1C103NS5	0.01 16V
C40	ECBT1H8R2KC5	8.2P 50V
C41	ECFR1C473MR	0.047 16V
C42	ECBT1H220JU5	22P 50V
C43	ECBT1C103NS5	0.01 16V
C44	ECBT1C103NS5	0.01 16V
C45	ECBT1C103NS5	0.01 16V
C46	ECBT1C103NS5	0.01 16V
C48	ECBT1H102KB5	1000P 50V
C49	ECBT1H102KB5	1000P 50V
C50	ECBT1C103NS5	0.01 16V
C51	ECEA1CU330B	33 16V
C52	ECBT1C103NS5	0.01 16V
C53	ECEA25M4R7RB	4.7 25V
C54	ECBT1H102KB5	1000P 50V
C55	ECBT1H102KB5	1000P 50V
C57	ECEA0JU221B	220 6.3V
C58	ECBT1H102KB5	1000P 50V
C59	ECBT1H102KB5	1000P 50V
C60	ECBT1H181KB5	180P 50V
C61	ECBT1C103NS5	0.01 16V
C62	ECBT1H150JC5	15P 50V
C63	ECBT1H150JC5	15P 50V
C64	ECBT1H102KB5	1000P 50V
C65	ECBT1H471KB5	470P 50V
C66	ECEA1HUR33B	0.33 50V
C67	ECQP1102JZT	1000P 100V
C68	ECFR1C103MR	0.01 16V
C69	ECEA1CU101B	100 16V
C70	ECEA1HU010B	1 50V
C71	ECBT1C103NS5	0.01 16V
C72	ECEA1HUR47B	0.47 50V
C73	ECEA1HU010B	1 50V
C74	ECEA1HU010B	1 50V
C75	ECEA1HU010B	1 50V
C76	ECEA1HU010B	1 50V
C77	ECBT0J223NS5	0.022 6.3V
C78	ECBT0J223NS5	0.022 6.3V
C79	ECBT1C103NS5	0.01 16V
C80	ECBT1C103NS5	0.01 16V
C81	ECBT1C103NS5	0.01 16V
C501	ECA1AKF820E	82 10V
C701	ECEA0JKA220I	22 6.3V
C702	ECEA1HKA010I	1 50V
C703	ECEA0JKA101I	100 6.3V
C704	ECUZ1E104MBN	0.1 25V
C705	ECEA1HKA010I	1 50V
C706	ECUV1H101JCN	100P 50V
C707	ECUV1E273KBN	0.027 25V
C708	ECUV1H472KBN	4700P 50V
C709	ECUV1C473KBN	0.047 16V
C710	ECUV1H152KBN	1500P 50V
C711	ECUZ1E104MBN	0.1 25V
C712	ECUZ1E104MBN	0.1 25V
C713	ECUV1C104MBM	0.1 16V
C714	ECEA0JKA101I	100 6.3V
C715	ECEA0JKA470I	47 6.3V
C716	ECUV1H561KBN	560P 50V
C717	ECUZ1E104MBN	0.1 25V
C718	ECUV1C224KBM	0.22 16V
C721	ECUV1H270JCN	27P 50V
C722	ECUV1H270JCN	27P 50V
C723	ECEA1AKA221I	220 10V
C724	ECUV1C104MBM	0.1 16V
C725	ECUV1H102KBN	1000P 50V
C726	ECUV1H102KBN	1000P 50V
C727	ECEA1HPK010I	1 50V
C728	ECEA1HPK010I	1 50V
C730	ECUZ1E104MBN	0.1 25V
C731	ECEA0JKA221	220 6.3V
C732	ECEA0JKA221	220 6.3V
C733	ECUZ1E104MBN	0.1 25V
C734	ECEA1AKA221I	220 10V
C735	ECUZ1E104MBN	0.1 25V
C736	ECUZ1E104MBN	0.1 25V
C737	ECUZ1E104MBN	0.1 25V
C738	ECUV1C154KBN	0.15 16V
C742	ECUV1E273KBN	0.027 25V
C743	ECUZ1E104MBN	0.1 25V
C744	ECUV1E822KBN	8200P 25V
C745	ECUV1C473MBN	0.047 16V
C746	ECUV1H050DCN	5P 50V
C747	ECUV1H222KBN	2200P 50V
C748	ECUV1H471KBM	470P 50V
C801	ECEA1HU010B	1 50V
C805	ECBT1H101KB5	100P 50V
C806	ECBT1H101KB5	100P 50V
C807	ECBT1E103ZF5	0.01 25V
C808	ECBT1E103ZF5	0.01 25V
C809	ECEA1CU101B	100 16V
C810	ECEA1CU470B	47 16V
C811	ECBT1H102KB5	1000P 50V
C812	ECBT1H102KB5	1000P 50V
C813	ECKR1H103ZF5	0.01 50V⚠
C814	ECKR1H103ZF5	0.01 50V
C815	ECEA1HU470B	47 50V
C817	ECKR1H103ZF5	0.01 50V⚠
C818	ECKR1H103ZF5	0.01 50V

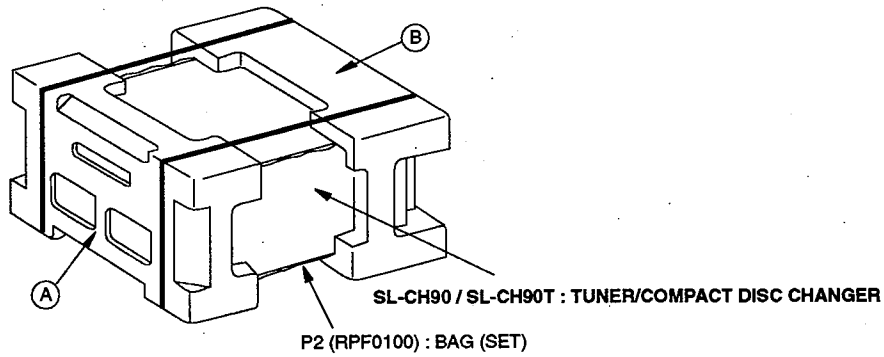
Ref. No.	Part No.	Values & Remarks
C819	ECKR1H103ZF5	0.01 50V
C820	ECKR1H103ZF5	0.01 50V
C821	ECEA1AU101B	100 10V
C822	ECBT1E103ZF5	0.01 25V
C823	ECEA1CU222E	2200 16V
C824	ECKR1H103ZF5	0.01 50V
C825	ECEA1AU101B	100 10V
C826	ECEA1HU010B	1 50V
C828	ECEA1AU101B	100 10V
C829	ECBT1E103ZF5	0.01 25V
C830	ECBT1E103ZF5	0.01 25V
C831	ECBT1H331KB5	330P 50V
C832	ECBT1H331KB5	330P 50V
C833	ECBT1H121KB5	120P 50V
C834	ECBT1H121KB5	120P 50V
C837	ECEA1EU102E	1000 25V
C838	ECEA1EU101B	100 25V
C839	ECBT1H102KB5	1000P 50V
C840	ECBT1H102KB5	1000P 50V
C842	ECBT1E103ZF5	0.01 25V
C843	ECEA1HKA010B	1 50V
C845	ECEA1HU010B	1 50V
C846	ECEA1HKA010B	1 50V
C847	ECEA1EKA4R7B	4.7 25V
C850	ECQV1H334JZ3	0.33 50V

Ref. No.	Part No.	Values & Remarks
C851	ECBT1H101KB5	100P 50V
C852	ECBT1H101KB5	100P 50V
C901	ECEA1HKAR33B	0.33 50V
C902	ECBT1C103MS5	0.01 16V
C903	ECBT0J223NS5	0.022 6.3V
C904	ECEA1HKAR22B	0.22 50V
C905	EECS5R5H473	0.047 5.5V
C906	ECBT1H102KB5	1000P 50V
C907	ECEA0JU102B	1000 6.3V
C908	ECBT1H561KB5	560P 50V
C909	ECBT1H561KB5	560P 50V
C910	ECBT1H561KB5	560P 50V
C911	ECEA0JKA101B	100 6.3V
C912	ECBT1H102KB5	1000P 50V
C913	ECBT1H101KB5	100P 50V
C914	ECBT1H101KB5	100P 50V
C915	ECEA1HKA3R3B	3.3 50V
C916	ECEA1HKA3R3B	3.3 50V
C917	ECEA1HKA010B	1 50V
C918	ECBT1H102KB5	1000P 50V
C919	ECBT1H560J5	56P 50V
C920	ECBT1H560J5	56P 50V
C921	ECBT1H680J5	68P 50V
C922	ECBT1H680J5	68P 50V
C923	ECBT1H220JC5	22P 50V

Ref. No.	Part No.	Values & Remarks
C924	ECBT1H180JC5	18P 50V
C925	ECBT1C103MS5	0.01 16V
C926	ECBT1H101KB5	100P 50V
C927	ECBT1C103MS5	0.01 16V
C928	ECBT1C103MS5	0.01 16V
C930	ECBT1C103MS5	0.01 16V
C931	ECBT1C103MS5	0.01 16V
C932	ECBT1C103MS5	0.01 16V
C933	ECBT1H102KB5	1000P 50V
C934	ECBT1H102KB5	1000P 50V
C1001	ECBT1H102KB5	1000P 50V
C1003	ECEA1HKA010B	1 50V
C1005	ECEA1HKA010B	1 50V
C1006	ECEA1HKA2R2B	2.2 50V
C1007	ECBT1H151KB5	150P 50V
C1008	ECBT1H101KB5	100P 50V
C1009	ECBT1H104ZF5	0.1 50V
C1010	ECBT1C103MS5	0.01 16V
C1011	ECBT1H470J5	47P 50V
C1012	ECBT1C103MS5	0.01 16V
C1013	ECEA1HKA2R2B	2.2 50V
C1019	ECEA1CKA100B	10 16V
C1120	ECBT1H102KB5	1000P 50V

■PACKAGING

■SL-CH90 / SL-CH90T (TUNER/COMPACT DISC CHANGER)



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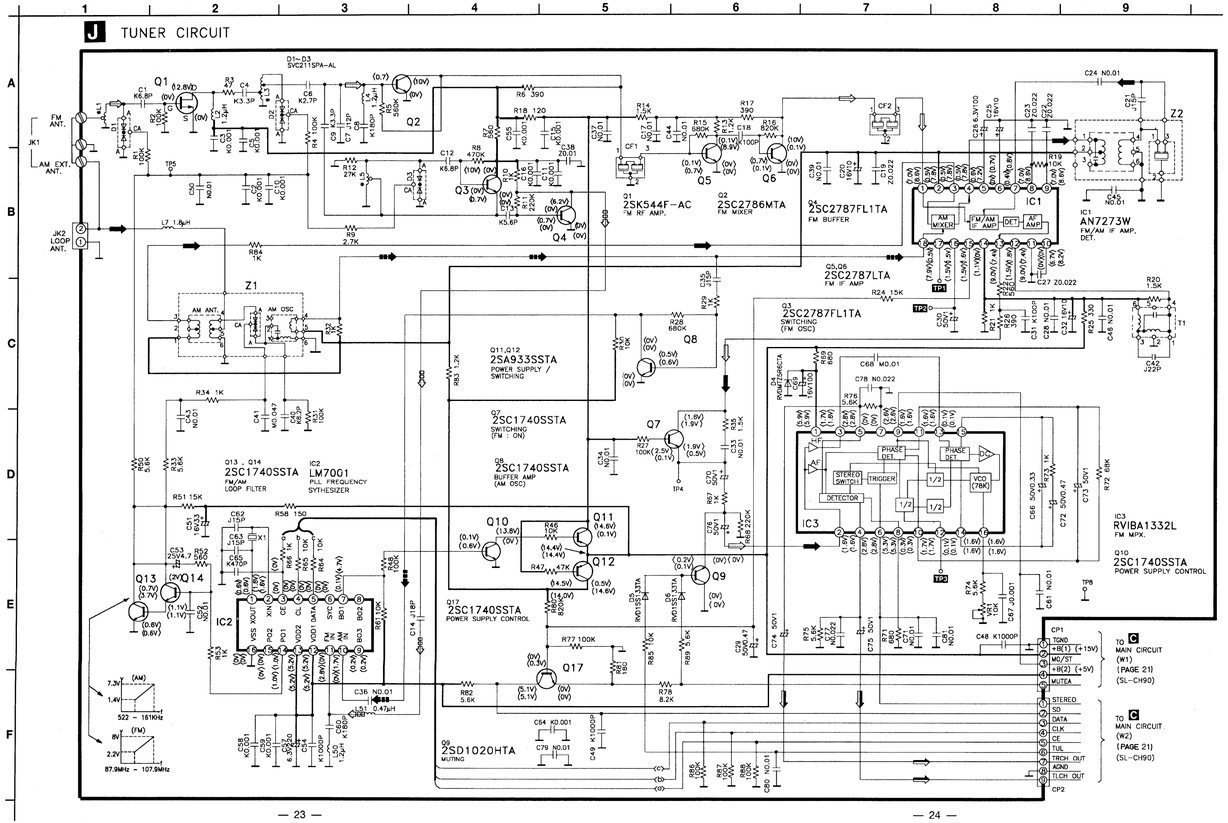
P940303300 G/A/J

■ SCHEMATIC DIAGRAM



Note:

< for Tuner circuit >

•VR1 : FM stereo adjustment.

•The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.
Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.

〈 〉 : FM ( ) : AM No mark : Playback

: FM Signal line
: AM signal line
: AM OSC signal line
: FM OSC signal line
: +B line
: FM/AM signal line

•Importance safety notice:
Components identified by ⚠ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

Caution !
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
•Cover the parts boxes made of plastics with aluminium foil.
•Ground the soldering iron.
•Put a conductive mat on the work table.
•Do not touch the pins of IC or LSI with fingers directly.

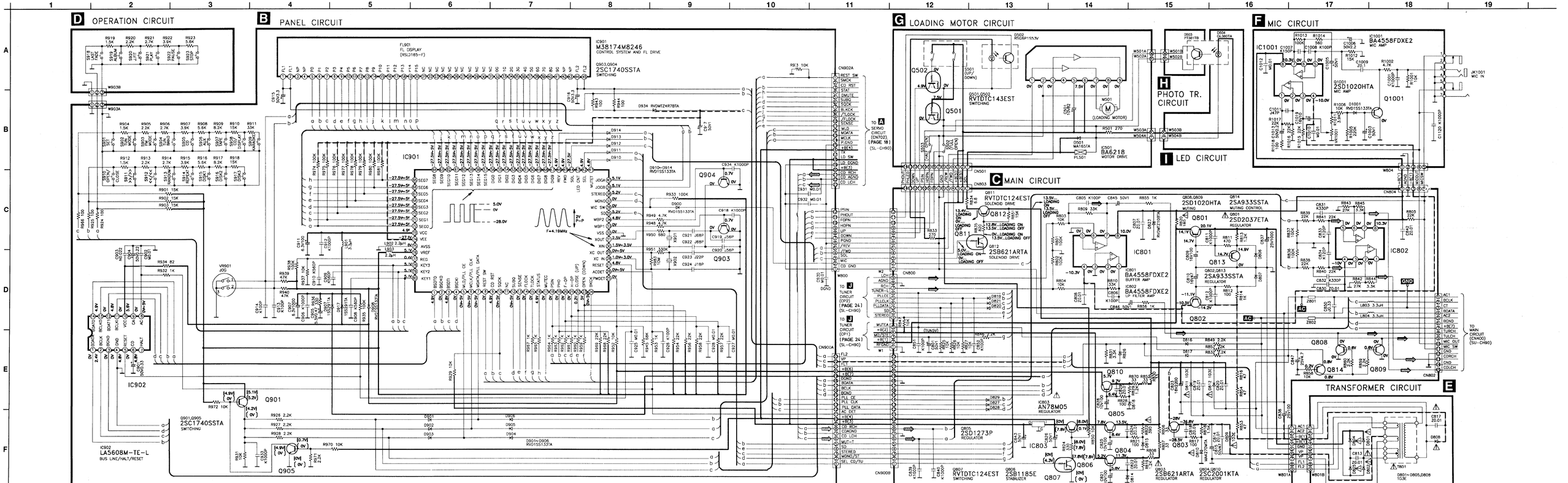
This schematic diagram may be modified at any time with development of new technology.

■ TERMINAL GUIDE OF ICs, TRANSISTORS & DIODES

AN7273W	AN8389SE1	AN8802SCE1V 42 Pin LA5608M-TE-L 14 Pin		RVIBA1332L	BA4558FDXE2
BA6218	AN78M05	LM7001	M38174M8246 80 Pin	MN66271RA 80 Pin	2SB621ARTA 2SC2001KTA
2SB709S		2SC2786MTA 2SC2787FL1TA 2SC2787LTA 2SD1020HTA	2SB1185E 2SD1273P	2SD2037ETA	2SK544F-AC
	2SA933SSTA 2SC1740SSTA RVTDTC124EST RVTDTC143EST		1SS291TA MA165TA RVD1SS133TA	SVC211SPA-AL	GL308TB PT381TB
MA4270MTA		RVDMTZ10BTA RVDMTZ11BTA RVDMTZ15CTA RVDMTZ4R7BTA RVDMTZ5R1BTA RVDMTZ5R6CTA RVDMTZ6R8ATA RVDMTZ8R2CTA	1D3E	RSQGP1S53V	

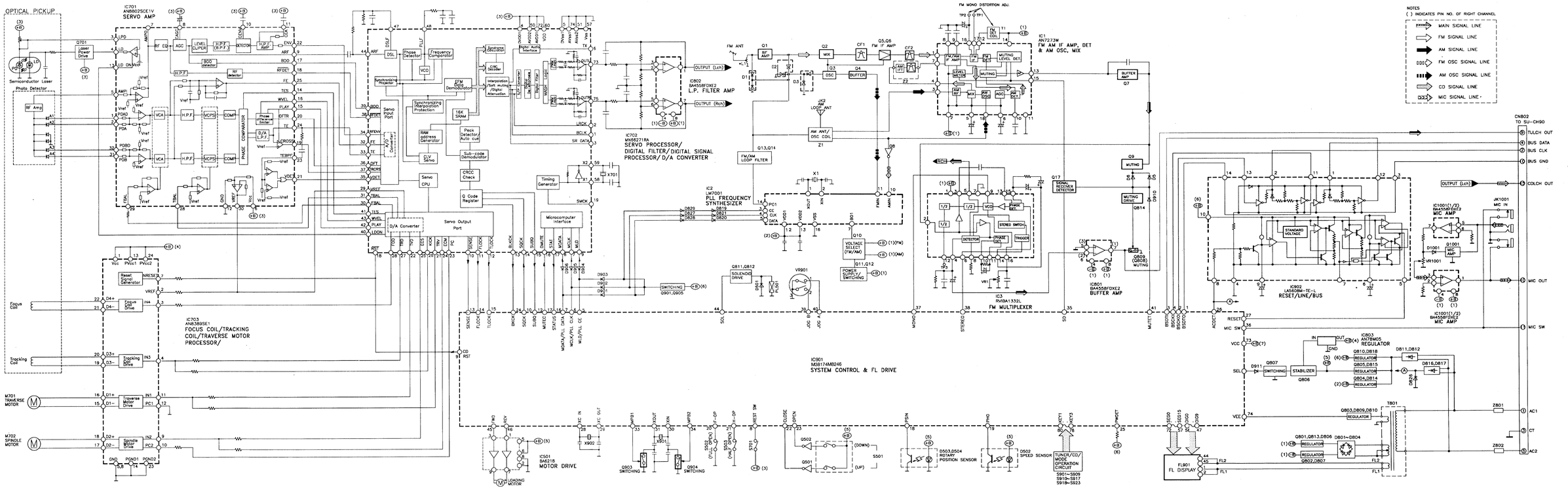
SL-CH90 / SL-CH90T SL-CH90 / SL-CH90T

■ SCHEMATIC DIAGRAM



SL-CH90 / SL-CH90T SL-CH90 / SL-CH90T

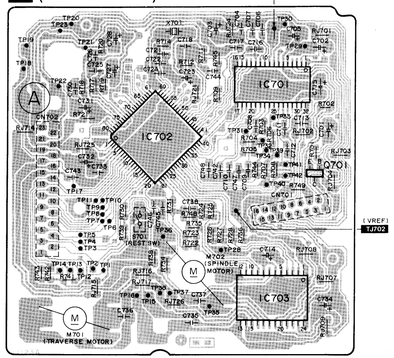
■ BLOCK DIAGRAM



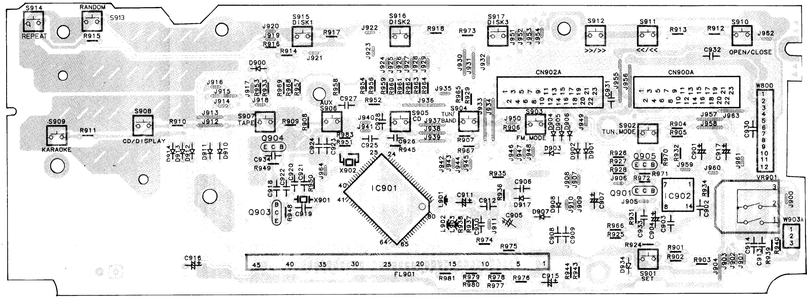
SL-CH90 / SL-CH90T SL-CH90 / SL-CH90T

■ PRINTED CIRCUIT BOARD

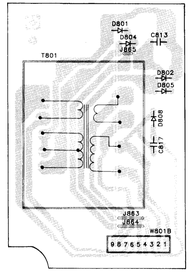
A SERVO P.C.B. (REP1650A – N)



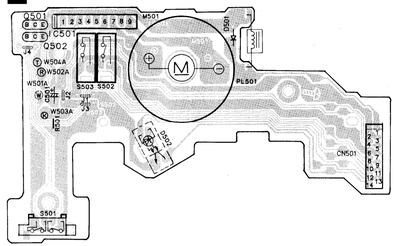
B PANEL P.C.B (REP1836B)



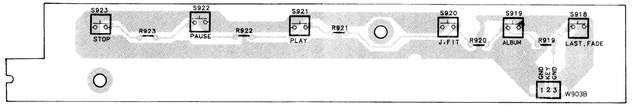
E TRANSFORMER P.C.B (REP1838A)



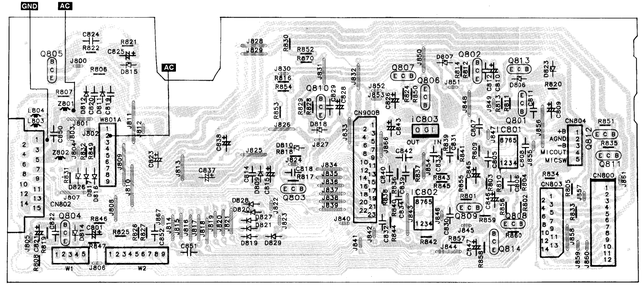
G LOADING MOTOR P.C.B



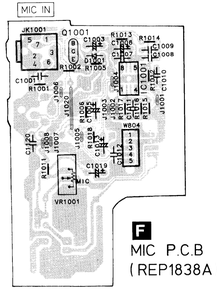
D OPERATION P.C.B (REP1836B)



SU-CH90

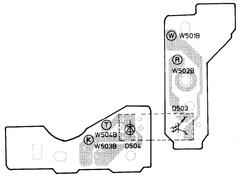


C MAIN P.C.B (REP1838A)

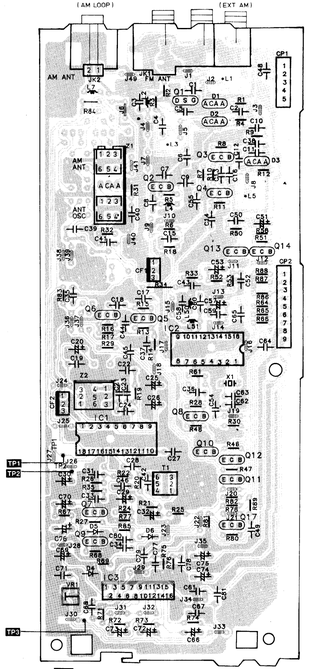


F MIC P.C.B (REP1838A)

H PHOTO TR. P.C.B



I LED P.C.B



J TUNER P.C.B (REP1548B)

■ SCHEMATIC DIAGRAM (Parts list on page 48 ~ 58)

(This schematic diagram may be modified at anytime with the development of new technology)

Note :

< for Servo circuit >

•S701 : Rest switch.

< for Main and Panel circuit >

•S501 : UP/DOWN switch.
•S502 : FULL OPEN switch.
•S503 : HALF OPEN switch.
•S901 : Set (SET) switch.
•S902 : Tuning mode select (TUNING MODE) switch.
•S903 : FM mode/beat proof (FM MODE/BP) switch.
•S904 : Tuner/Band select (TUNER/BAND) switch.
•S905 : CD input select (CD) switch.
•S906 : AUX input select (AUX) switch.
•S907 : TAPE input select (TAPE) switch.
•S908 : CD display mode select (CD DISPLAY) switch.
•S909 : KARAOKE mode select.
•S910 : Disc tray open/close select (OPEN/CLOSE) switch.
•S911 : Forward skip select (▶▶/▶▶|) switch.
•S912 : Reverse skip select (|◀◀/◀◀) switch.
•S913 : Random play select (RANDOM) switch.
•S914 : Repeat play select (REPEAT) switch.
•S915 : DISC 1 select switch.
•S916 : DISC 2 selct switch.
•S917 : DISC 3 select switch.
•S918 : Last fade editing select (LAST FADE) switch.
•S919 : Album editing select (ALBUM) switch.
•S920 : J. Fit editing select (J. FIT) switch.
•S921 : CD play select (▷) switch.
•S922 : CD pause select (▯▯) switch.
•S923 : CD stop select (□) switch.
•VR901 : Tuning/CD skip (TUNING/CD SKIP)adjustment.

: +B lines　　: CD signal lines
: –B lines　　: FM/AM signal line

•The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.
Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.

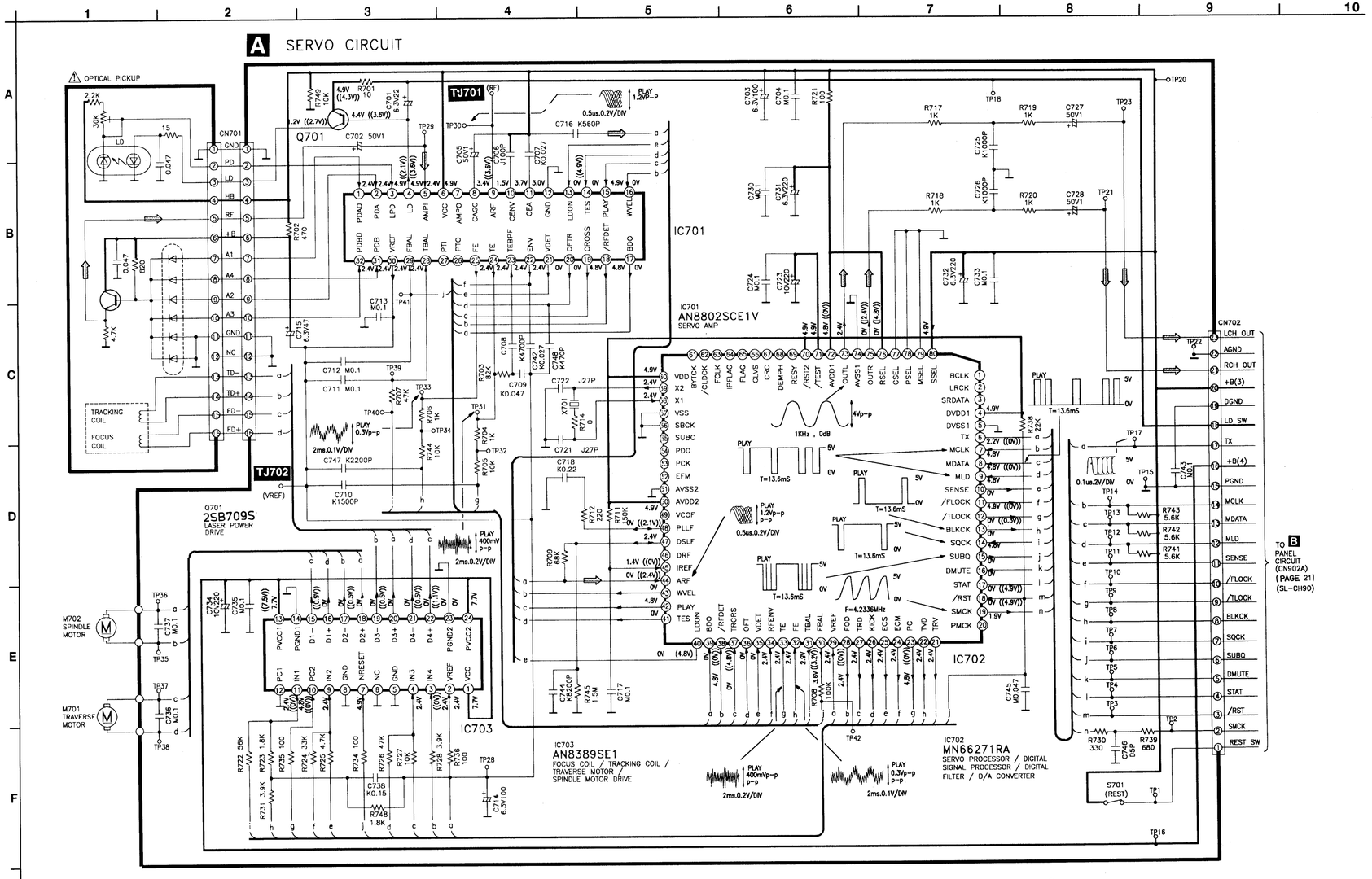
{ } : FM/AM　　( ) : Other　　No mark : Playback　　(( )) : CD

• Importance safety notice:
Components identified by ⚠ mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

Caution !
IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.
•Cover the parts boxes made of plastics with aluminium foil.
•Ground the soldering iron.
•Put a conductive mat on the work table.
•Do not touch the pins of IC or LSI with fingers directly.

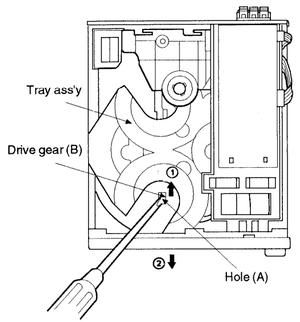
SL-CH90 / SL-CH90T　SL-CH90 / SL-CH90T

■ SCHEMATIC DIAGRAM

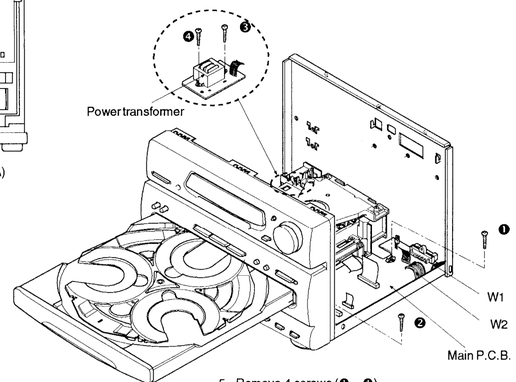


• Check the main P.C.B.

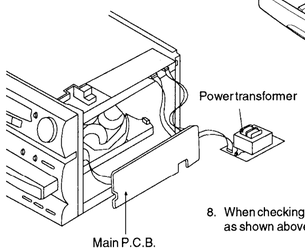
1. Remove the cabinet. (See Ref. No. 1 of the disassembly instruction.)
2. Remove the tuner P.C.B. and tuner P.C.B. support. (See Ref. No. 2 of the disassembly instruction.)
   Note : Do not remove the connectors CP1 and CP2.
3. Remove the rear panel. (See Ref. No. 3 of the disassembly instruction.)



4. Pressing the drive gear in the direction of arrow① with inserting the (–) screwdriver into the hole (C), the tray ass'y will move slightly in the direction of arrow②. Then, pull out the tray ass'y in the direction of arrow②.



5. Remove 4 screws (❶ ~ ❹).
6. Remove the power transformer.
7. Remove the main P.C.B.



8. When checking the soldered surface of the main P.C.B., do as shown above.

■ Installation of the Loading Components

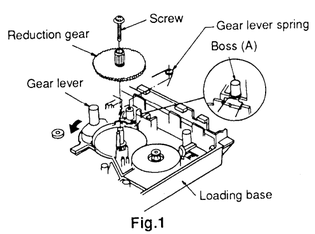


Fig.1

1. Install the gear lever on the loading base and then slide the gear lever in the direction of arrow ①. (See Fig.1.)
2. Install the reduction gear and secure it with a screw. (See Fig.1.)
3. Install the gear lever spring to the boss (A). (See Fig.1.)

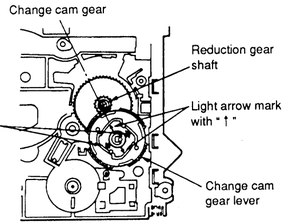


Fig.2

4. Install the change cam gear. (See Fig.2.)
   Note: Align the tip of the light arrow marked with "↑" on the change cam gear with the axis of the reduction gear shaft.

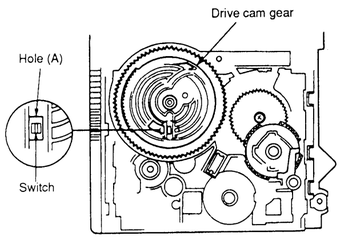


Fig.4

7. Align the hole (A) of the drive cam gear with the switch, and then insert the drive cam gear. (See Fig. 4)
   Note: In case that the drive cam gear is inserted into the holes except the hole (A) of the drive cam gear, the switch may be damaged.

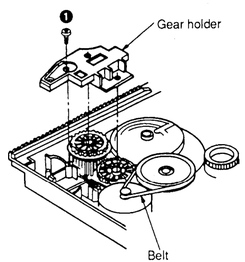


Fig.6

9. Install the gear holder and secure it with a screw ❶. (See Fig.6.)
10. Install the belt. (See Fig.6.)

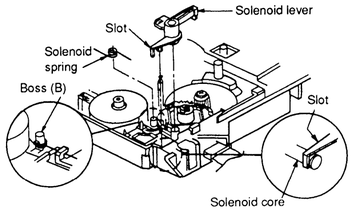


Fig.3

5. Install the solenoid lever. (See Fig.3)
   Note: Align the slot of the solenoid lever with the solenoid core.
6. Install the solenoid spring to the boss (B). (See Fig.3.)

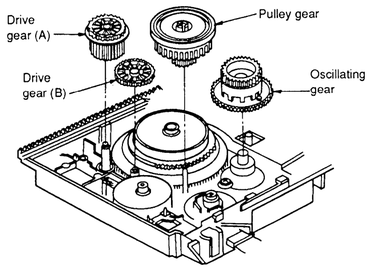


Fig.5

8. Install the drive gear (B), the drive gear (A), the oscillating gear ass'y and the pulley gear. (See Fig. 5)

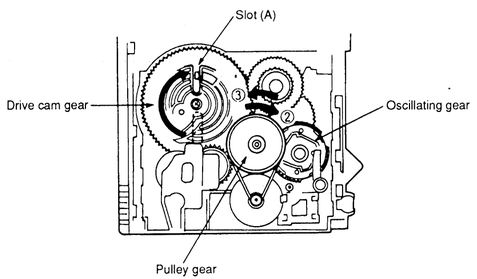


Fig.7

11. Rotate the pulley gear in the direction of arrow ② and then rotate the pulley gear to full position in the direction of arrow ③ when the oscillating gear stops.
12. Rotate the drive cam gear so that the slot (A) of the drive cam gear is put into a given position as shown in fig.7.

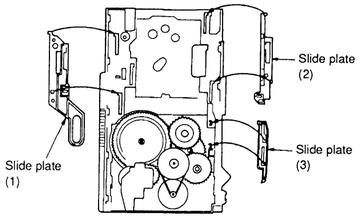


Fig.8

13. Install slide plate (1), slide plate (2) and slide plate (3).

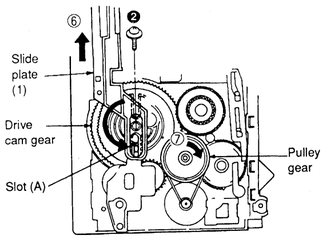


Fig.10

16. Push slide plate (1) in the direction of arrow ⑥, so that the catch (A) in Fig.9 engages with slide plate (1).
17. Secure slide plate (1) with a screw (❷).
18. Rotate the pulley gear in the direction of arrow ⑦ so that slot (A) of the drive can gear is in the position shown in Fig.10.

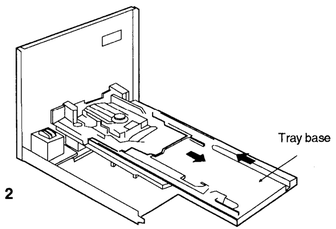


Fig. 2

3. After sliding the tray base in the directionof arrow①, draw the tray base gradually in the direction of arrow②. (See Fig 2.) Slide the tray base until the tray base stops.

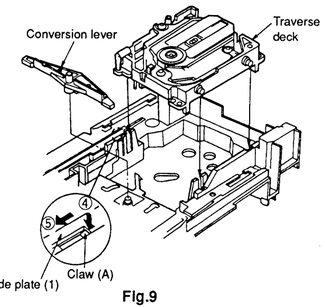


Fig.9

14. Press catch (A) in the direction of arrow ④ and then push slide (1) of the loading unit in the direction of arrow ⑤. (See Fig.9)
15. Install the traverse deck and the conversion lever. (See Fig.9)

■ INSTALLATION OF THE TRAY BASE AND THE TRAY ASS'Y

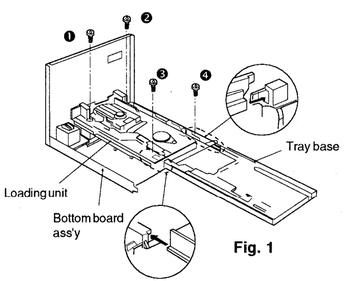


Fig. 1

1. Install the loading unit on the bottom board ass'y and secure it with 4 screws (❶ ~ ❹). (See fig. 1)
2. Install the tray base on the loading unit. (See fig. 1)

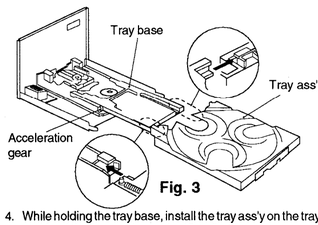


Fig. 3

4. While holding the tray base, install the tray ass'y on the tray base and feed the tray ass'y slowly. (See fig.3)
5. After engaging the acceleration gear, release the tray base which is held and feed the tray ass'y. (See fig.3)